

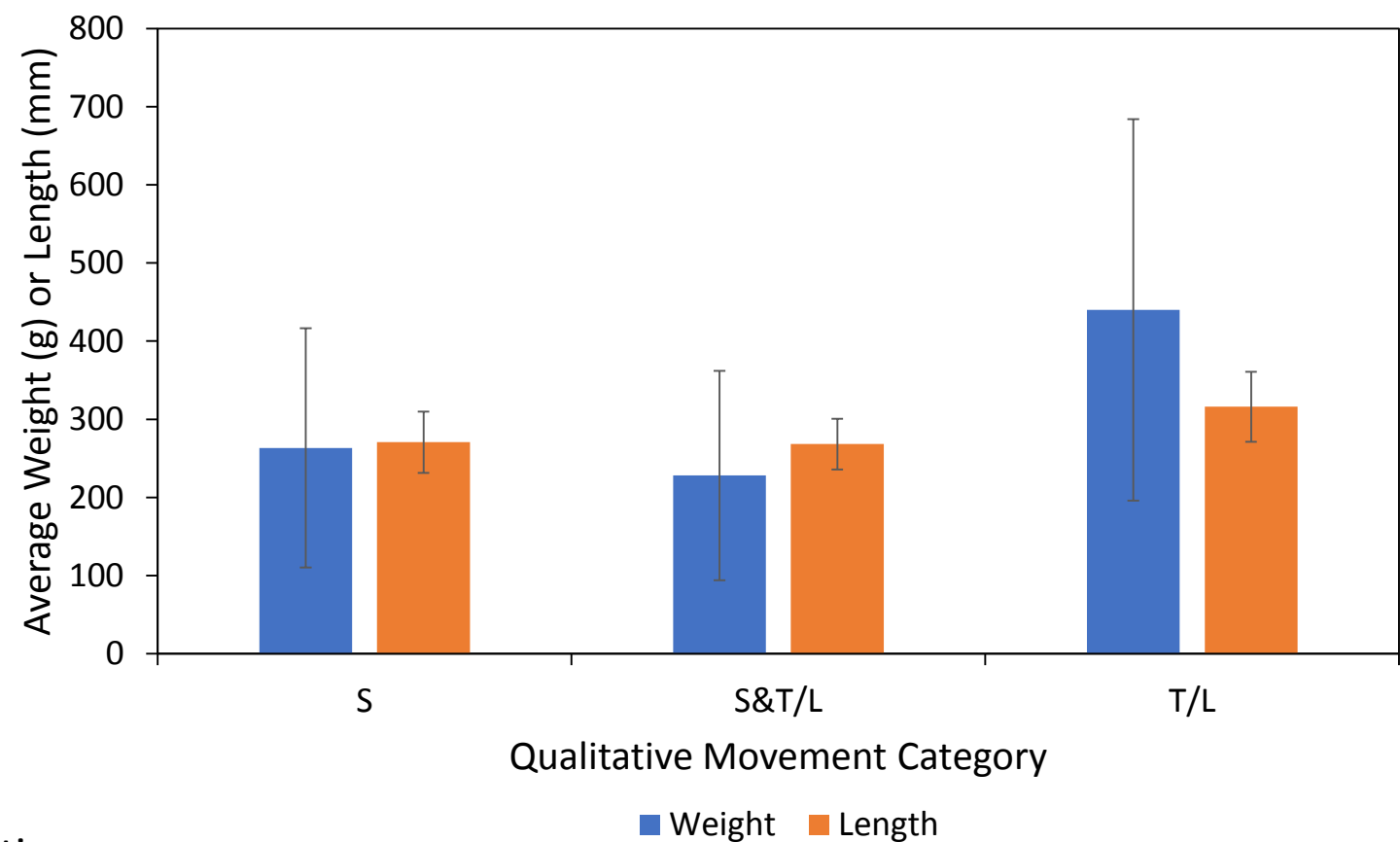
Number of Fish Detected

Tracking Study Data Period	Number of Fish Detected
0 to 3 Months	40
3 to 6 Months	27
6 to 9 Months	25
9-Month Data Download Event (Jan. 14 to 18, 2019)	12

Number of Fish in each Qualitative Movement Category

Qualitative Movement Category	Number
Predominantly Stationary (S)	20
Stationary with Traveling and/or Leaving Study Area (S&T/L)	16
Predominantly Traveling and/or Leaving Study Area (T/L)	4

Fish Characteristics by Qualitative Movement Category



S = Predominantly Stationary

S&T/L = Stationary with Traveling and/or Leaving Study Area

T/L = Predominantly Traveling and/or Leaving Study Area

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Fish Movement Daily Detection Summary Plots

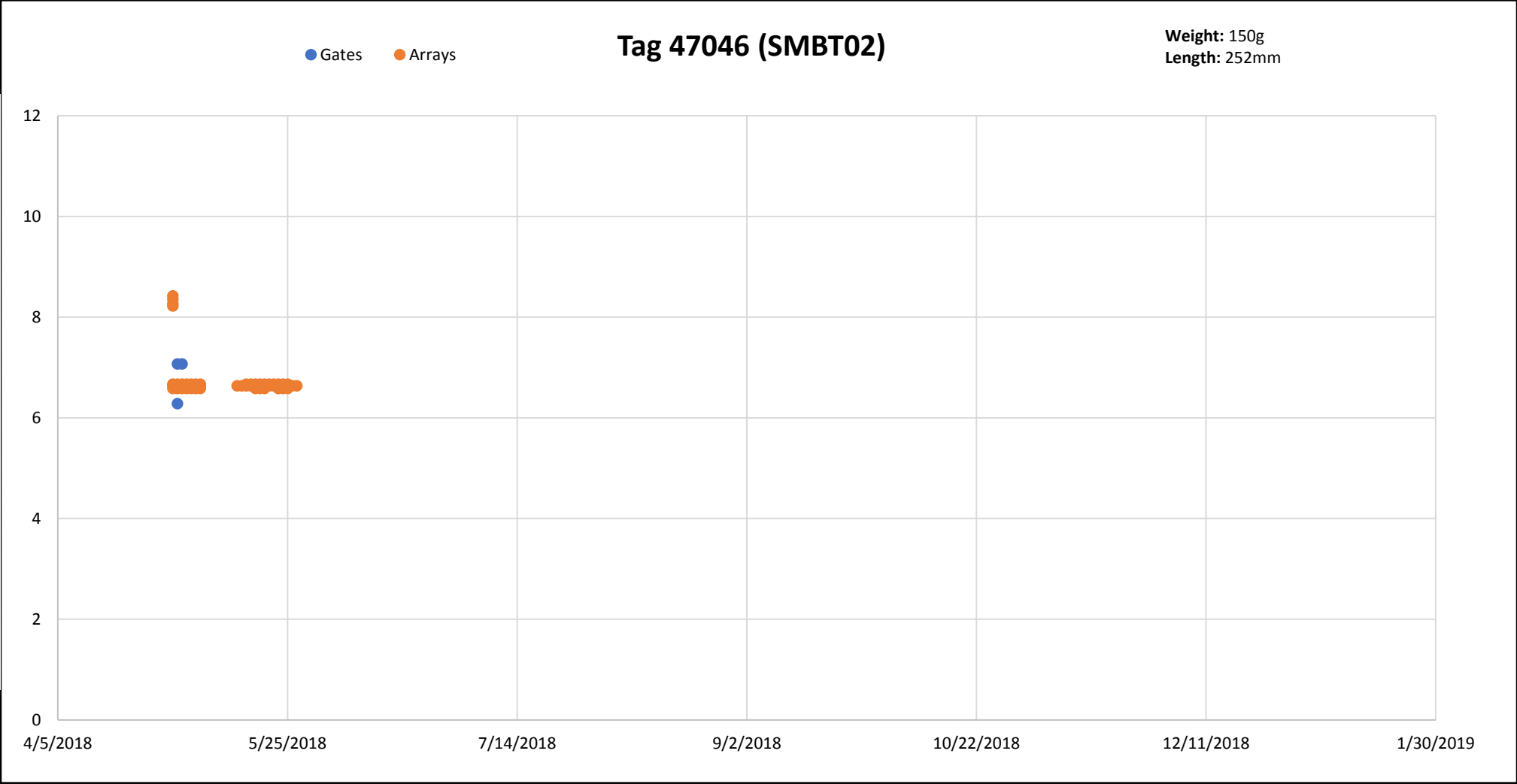
- Plots represent which receiver gates and/or arrays detected a fish on any given day
- Detection summaries do not estimate actual position of fish
 - Presence/absence only
- Estimates of actual fish position only available near high-resolution arrays
 - Willamette Cove (RM 6.5E)
 - Swan Island Lagoon (RM 8E)
 - RM 11.5E

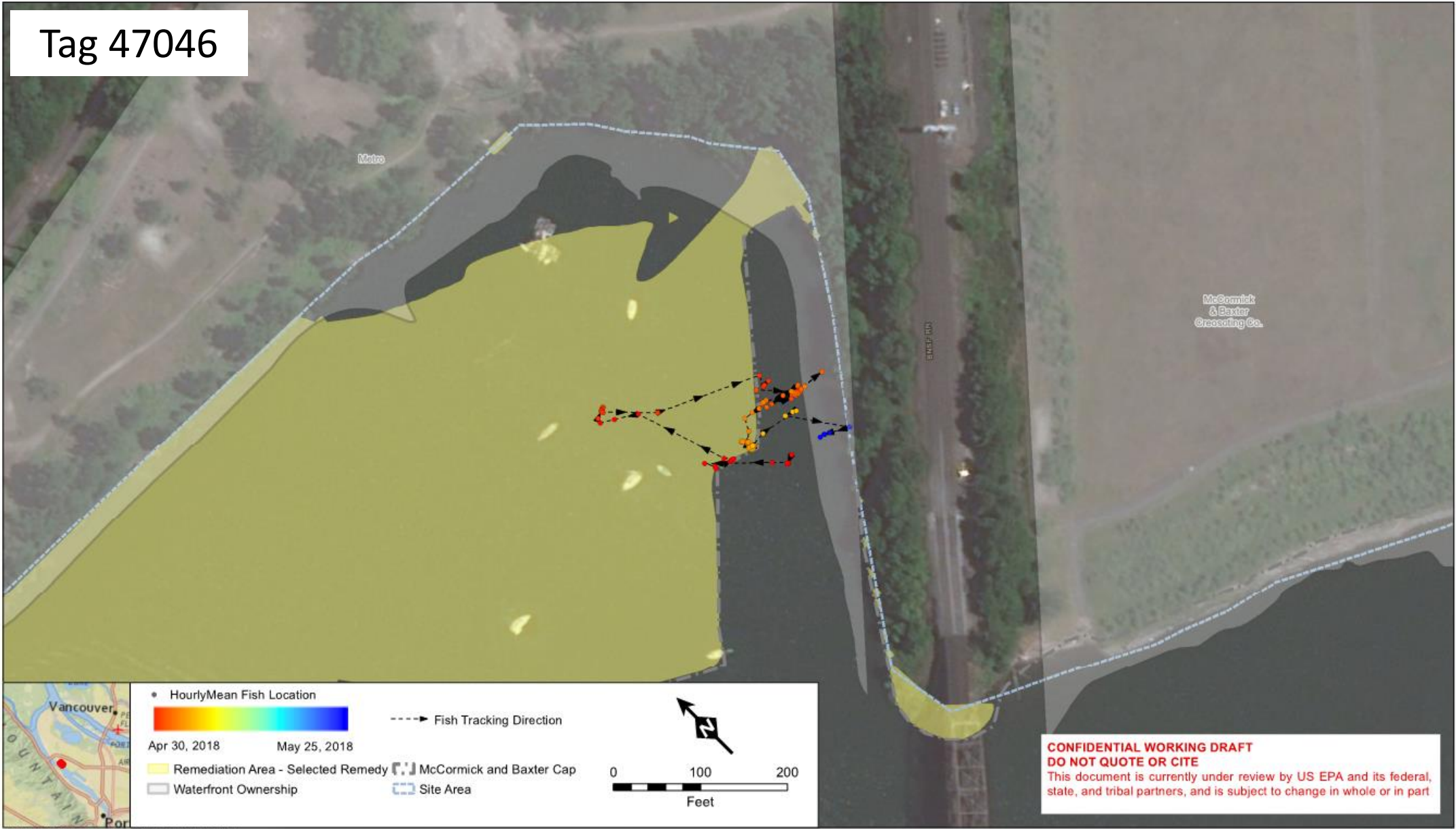
Receiver Locations in Site



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Predominantly Stationary





Fish Movement for 47046, Hourly Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

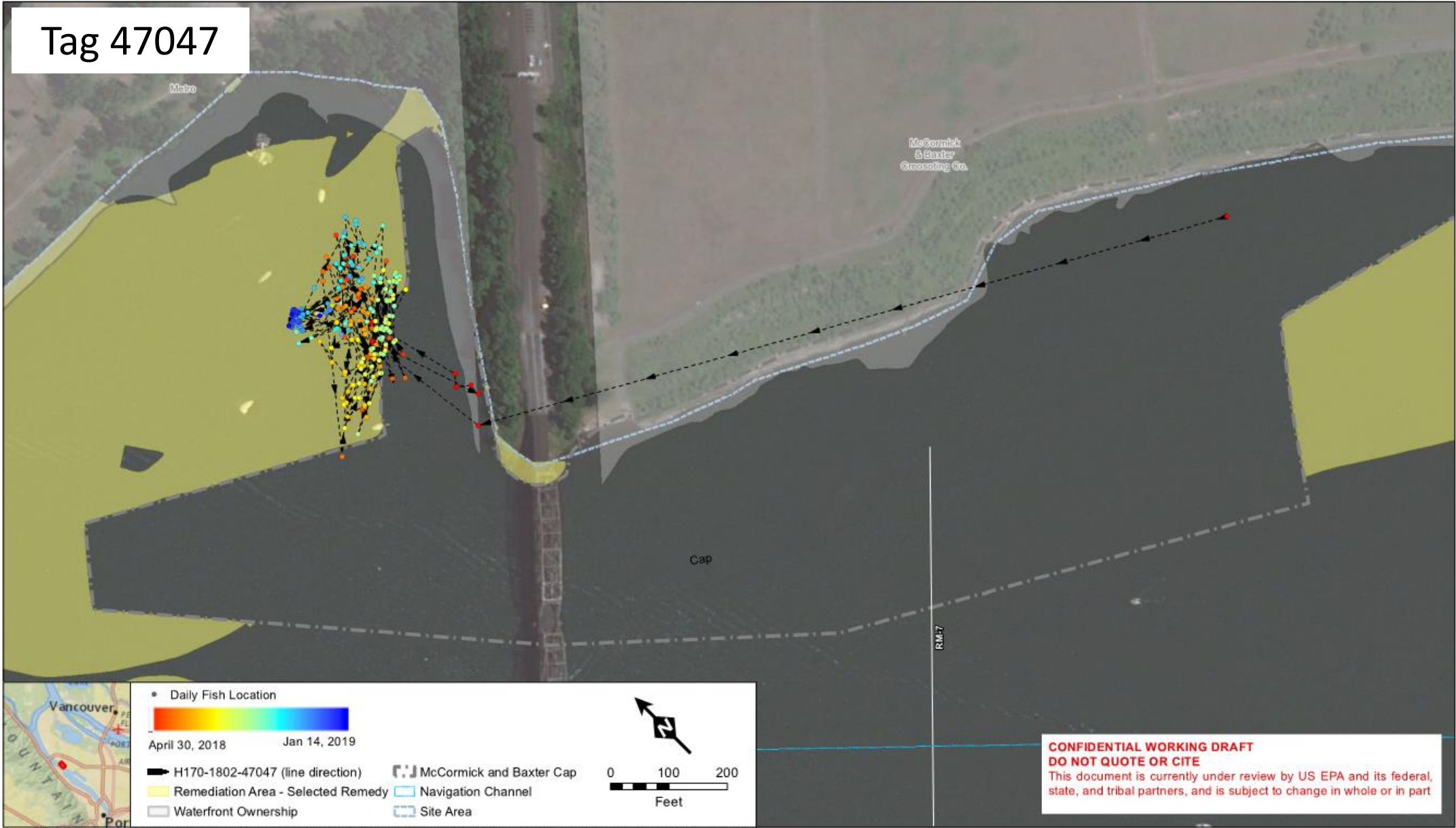
Tag 47047 (SMBT01)

Weight: 177g
Length: 252mm

Legend: Gates (blue dots), Arrays (orange dots)

The plot displays depth (m) on the y-axis (0 to 12) against time on the x-axis (4/5/2018 to 1/30/2019). The 'Gates' data (blue dots) shows a dense cluster of points between 6m and 8m depth, with some outliers at higher depths. The 'Arrays' data (orange dots) shows a few points at higher depths (around 8m) and a long, thin horizontal line at approximately 6.5m depth.

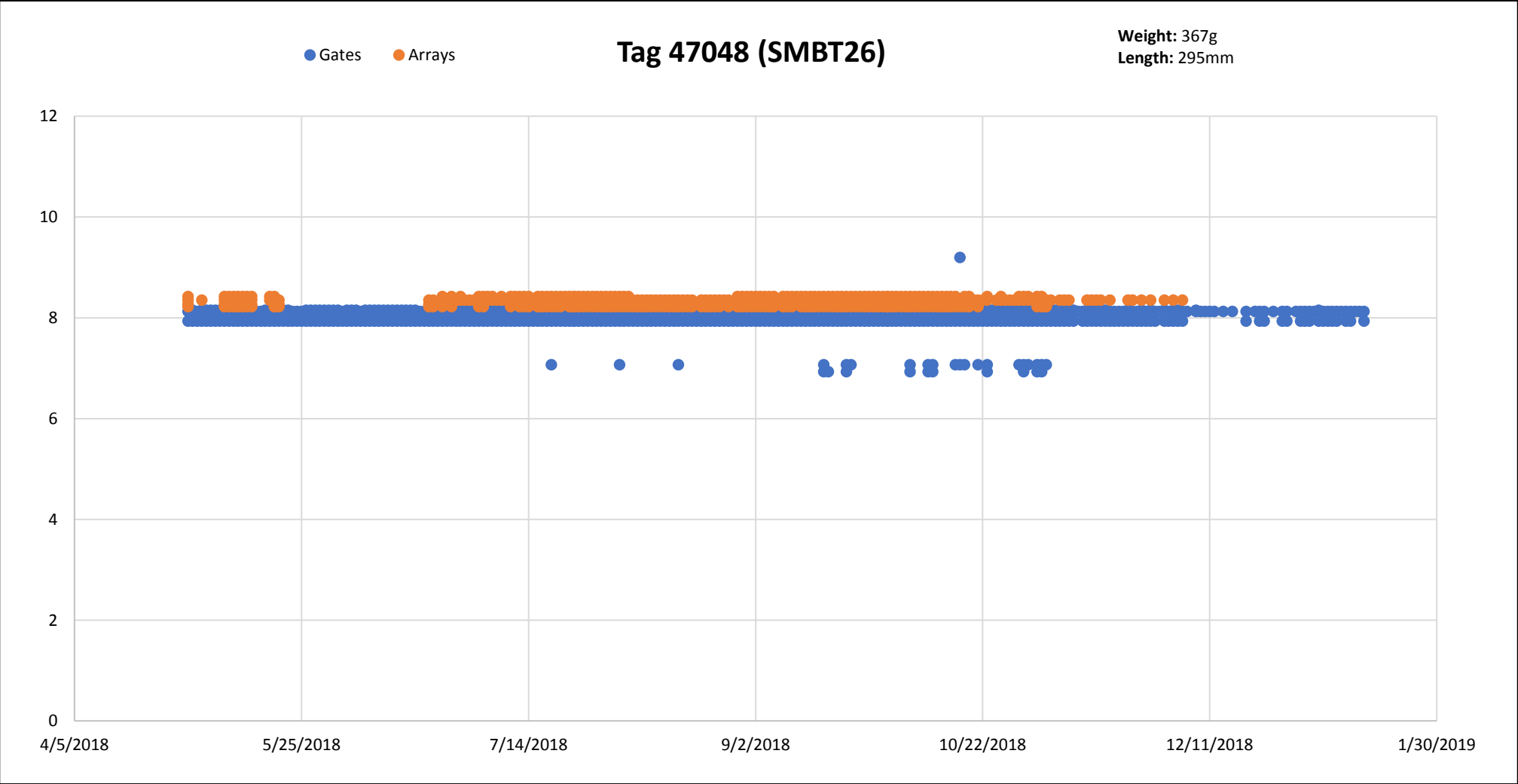
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

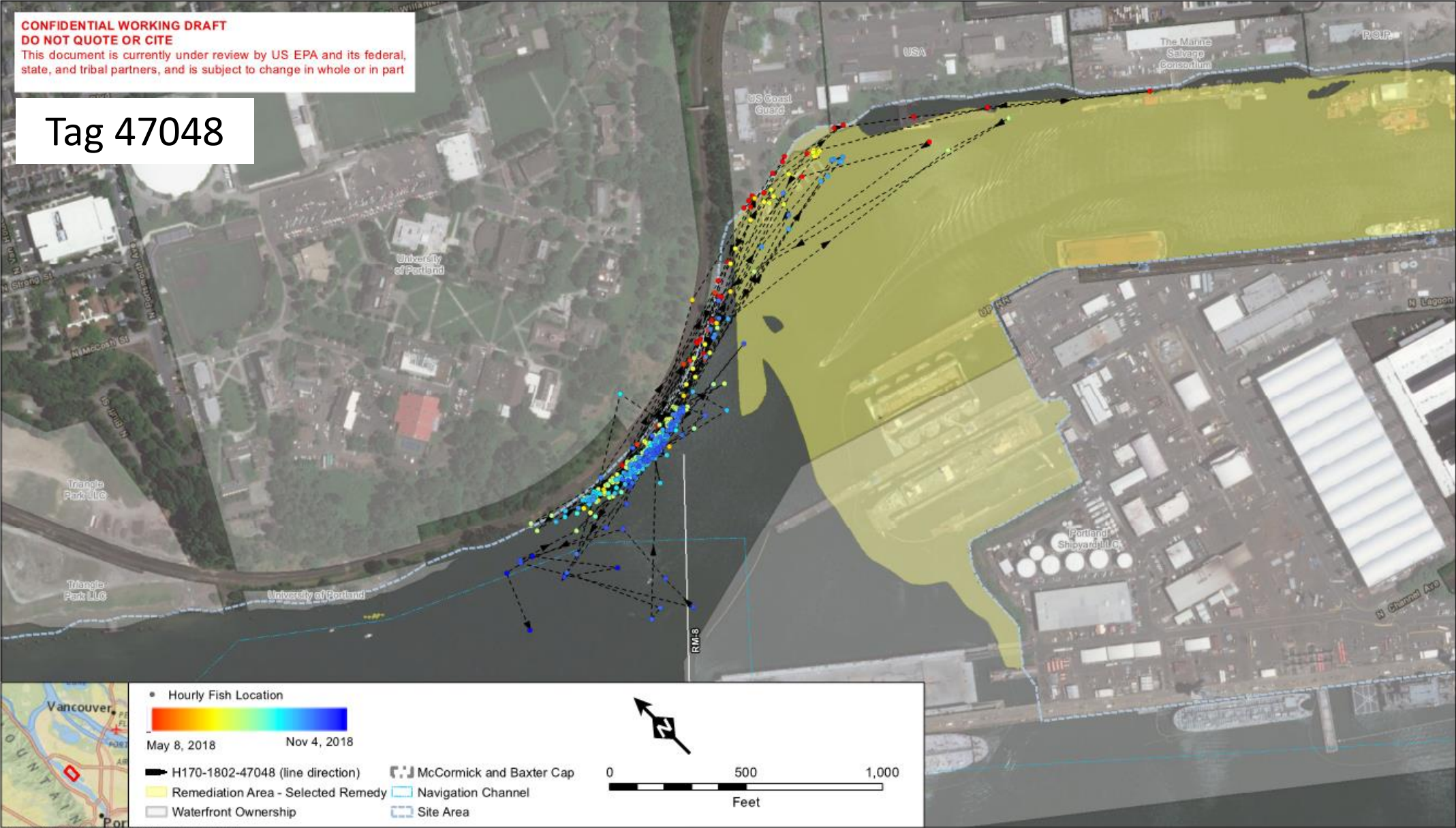


Fish Movement for 47047, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary

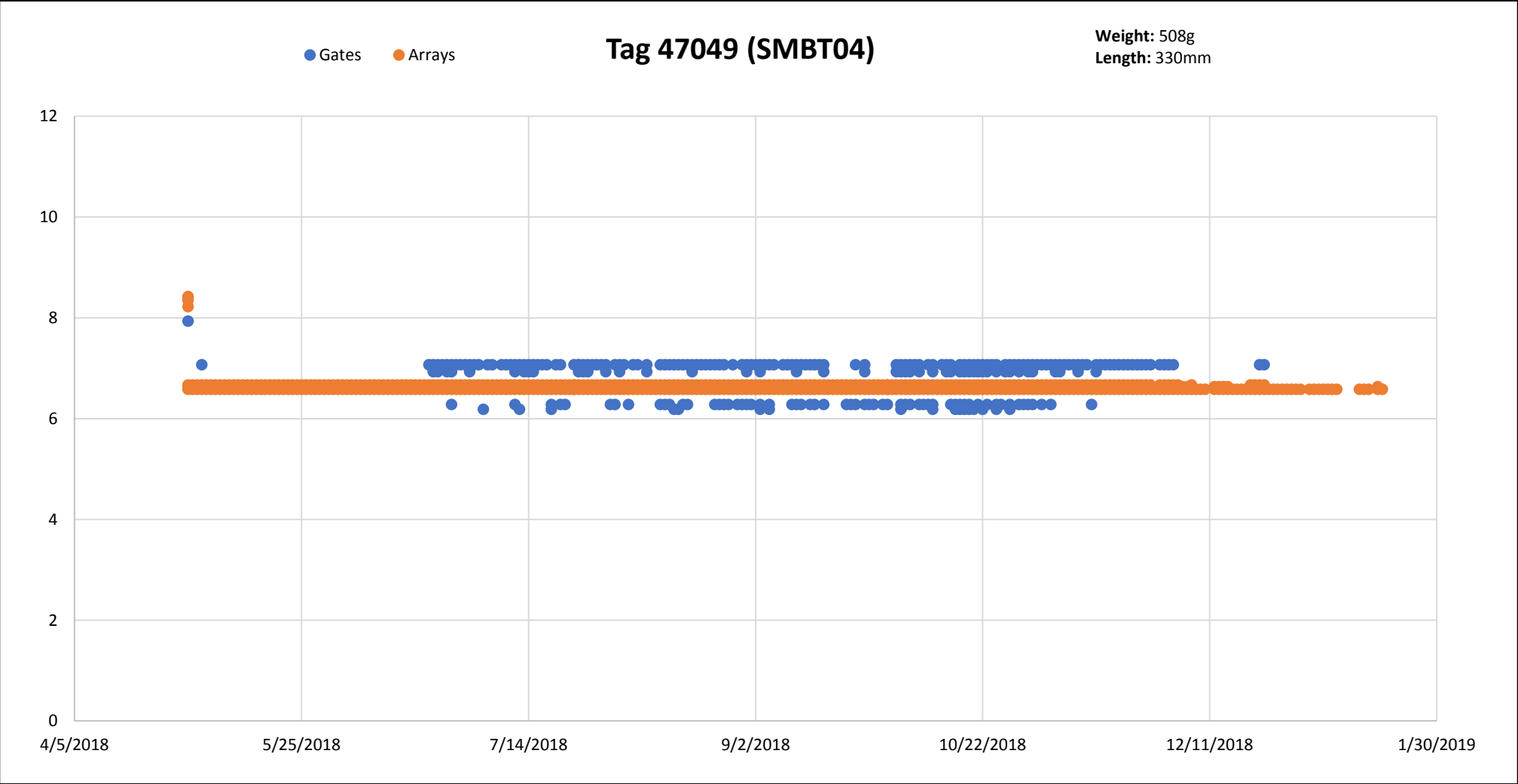




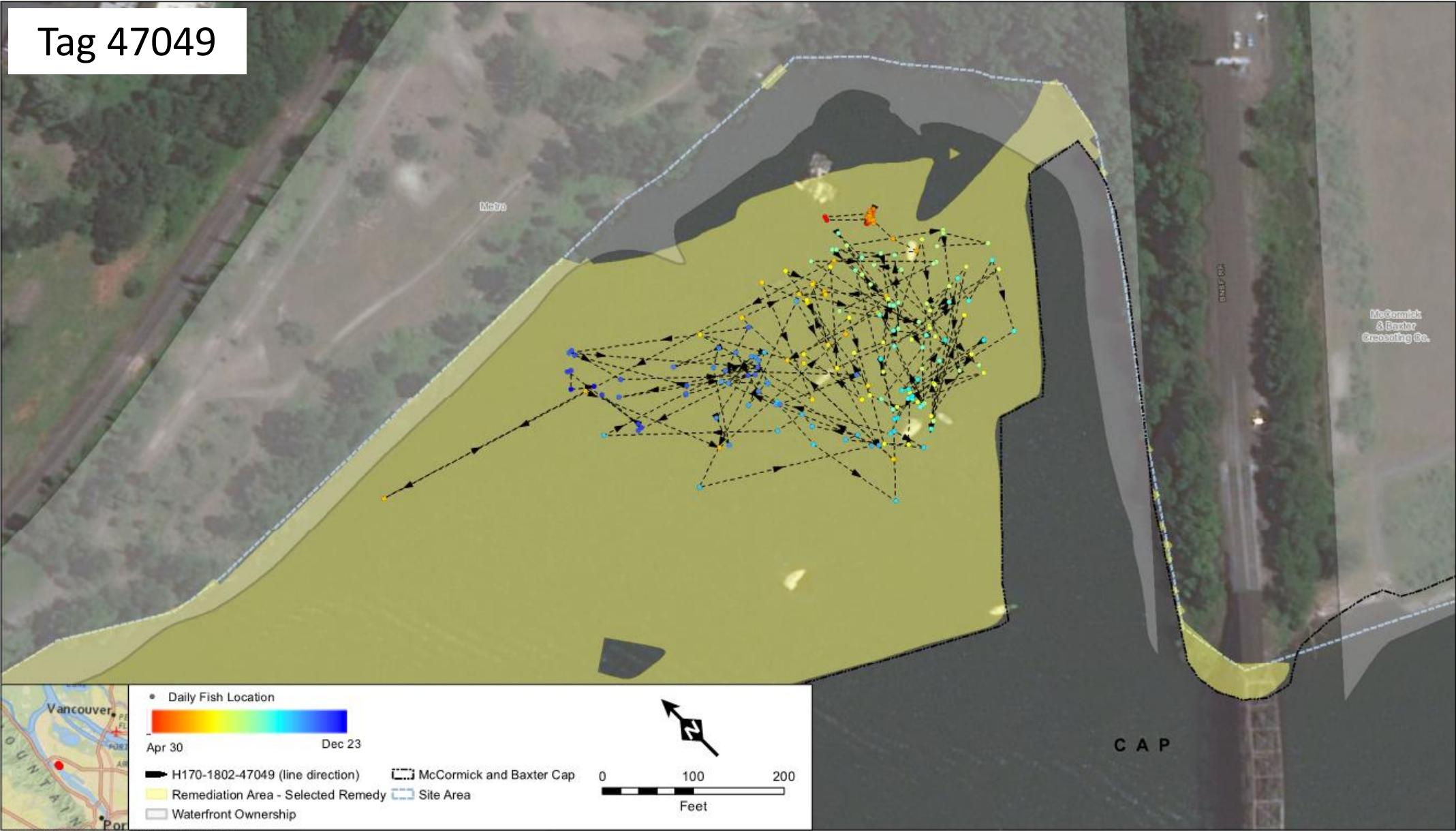
Fish Movement for 47048, Hourly Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary



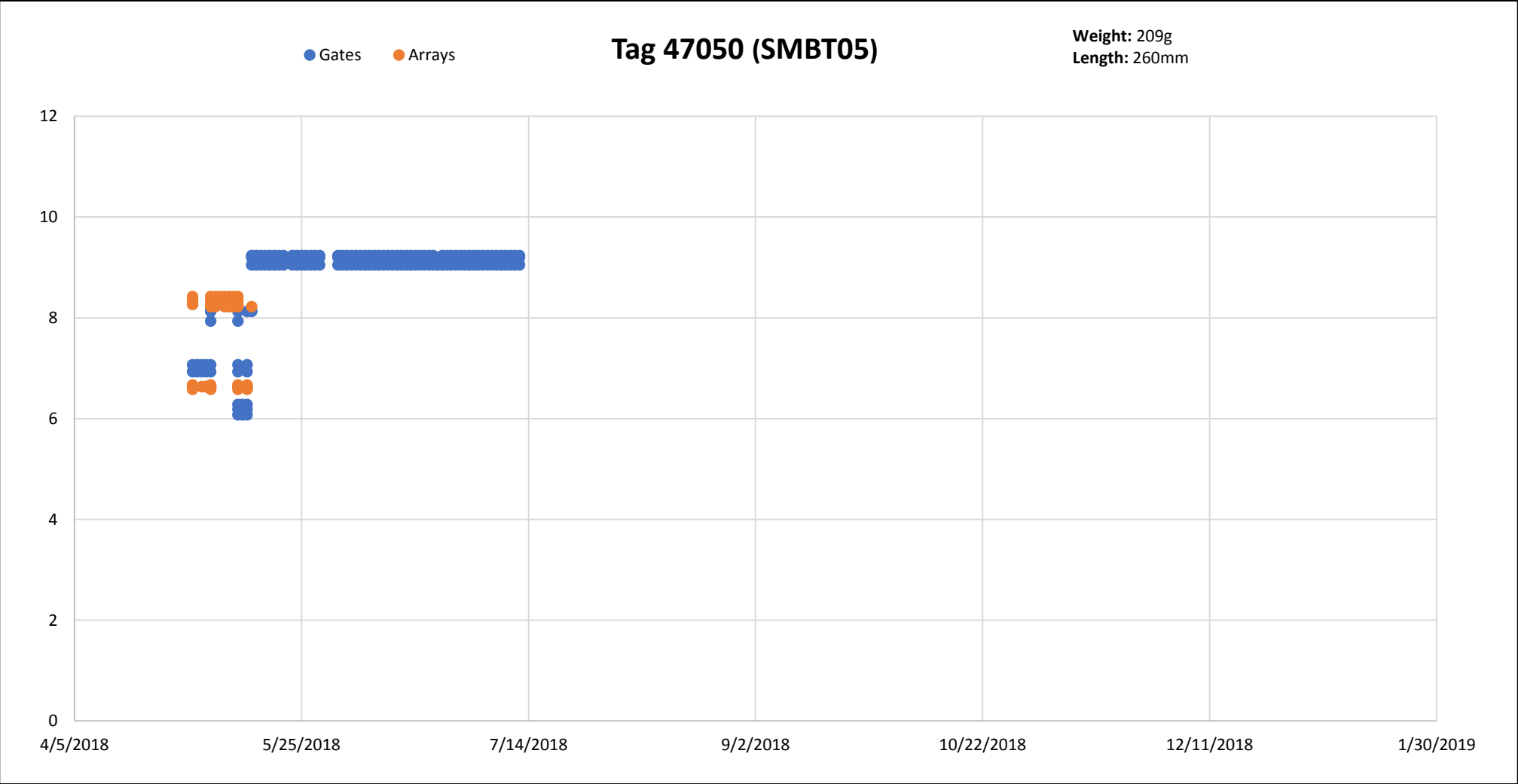
Tag 47049



Fish Movement for 47049, Daily Average, 2018
Portland Harbor Superfund Site

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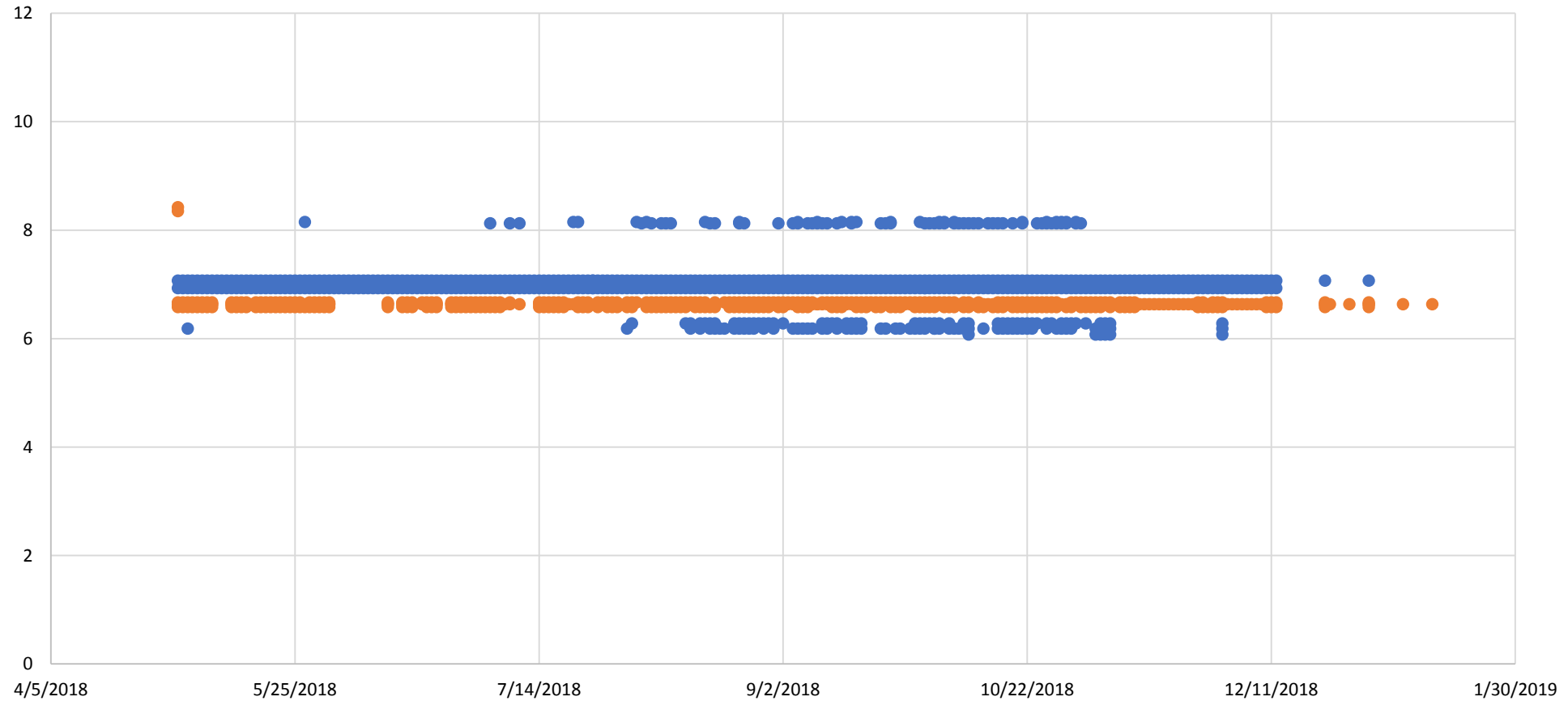
Stationary with Traveling and/or Leaving Study Area



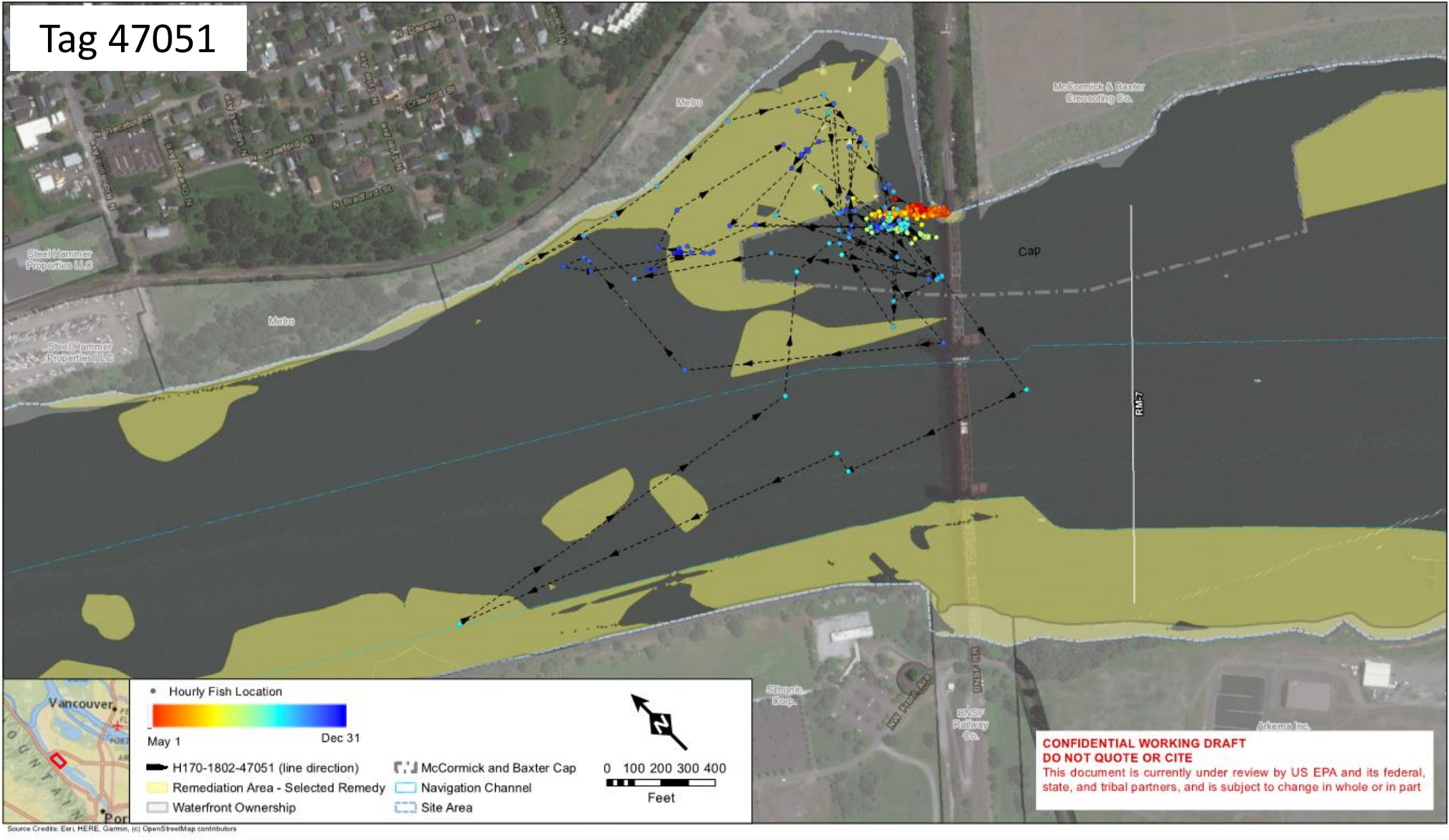
Limited fish location data for 47050 (SMBT05) from the receiver arrays. No location map developed.

● Gates ● Arrays

Weight: 127g
Length: 233mm



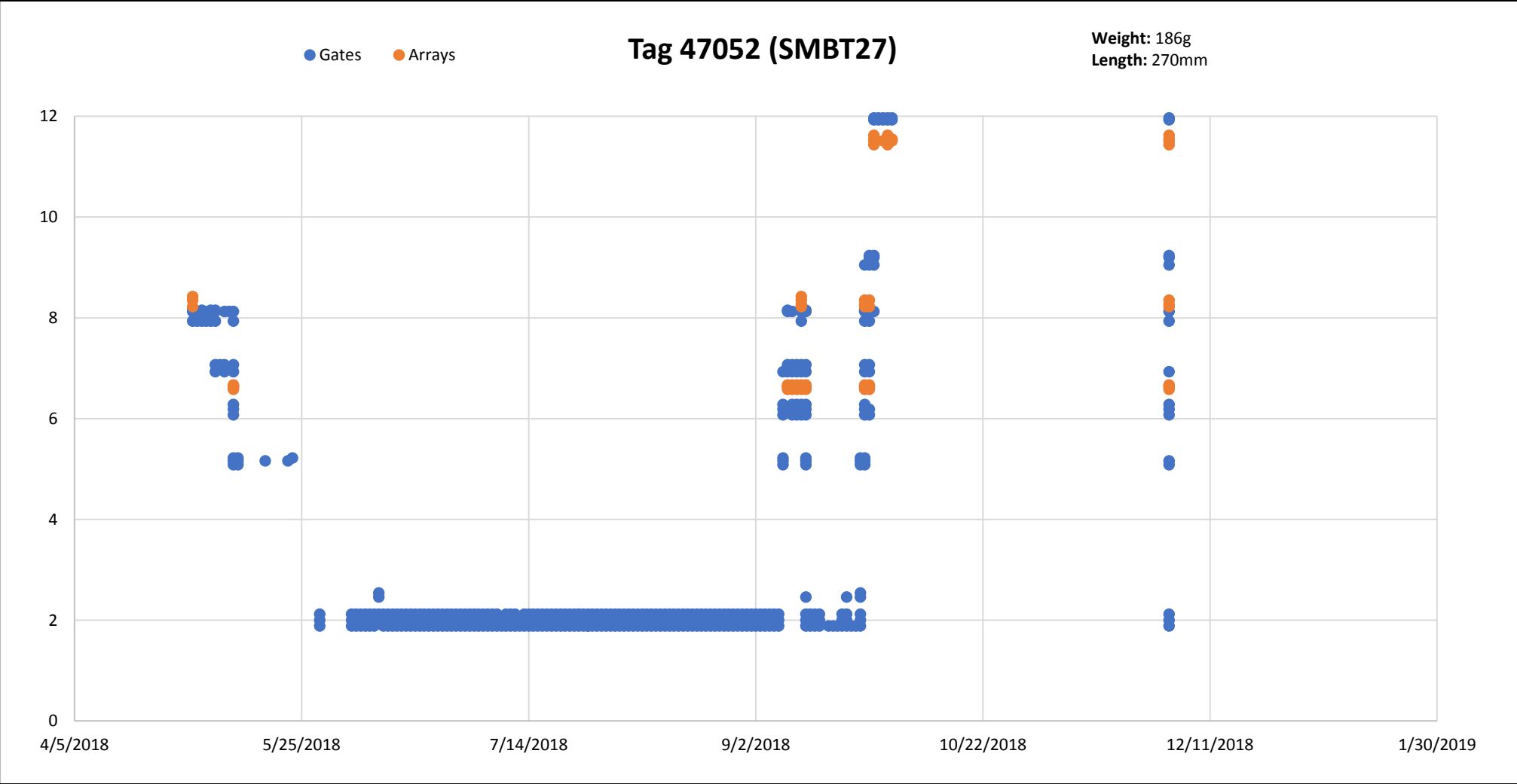
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.



Fish Movement for 47051, Hourly Mean, 2018
Portland Harbor Superfund Site

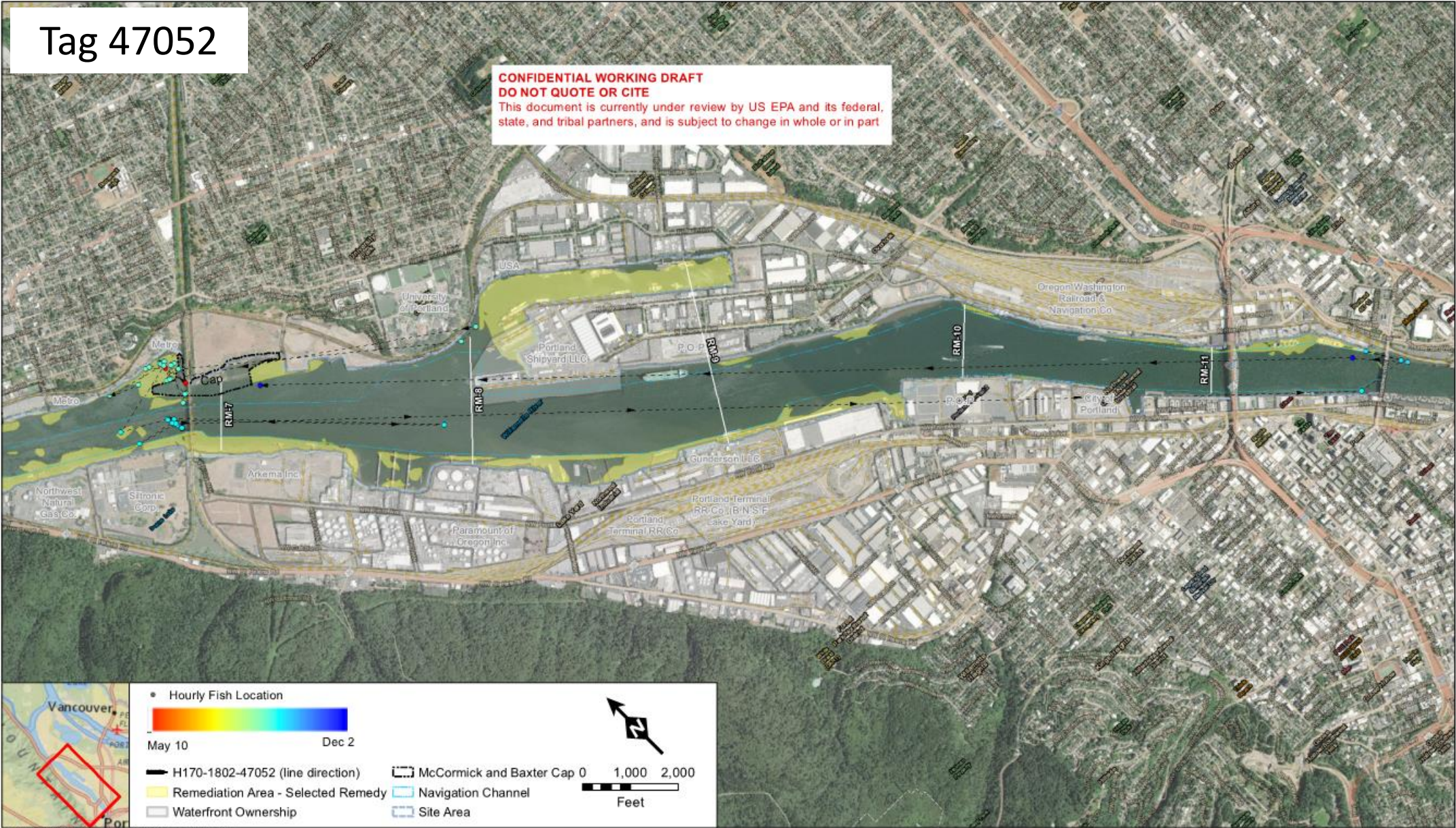
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Stationary with Traveling and/or Leaving Study Area



Tag 47052

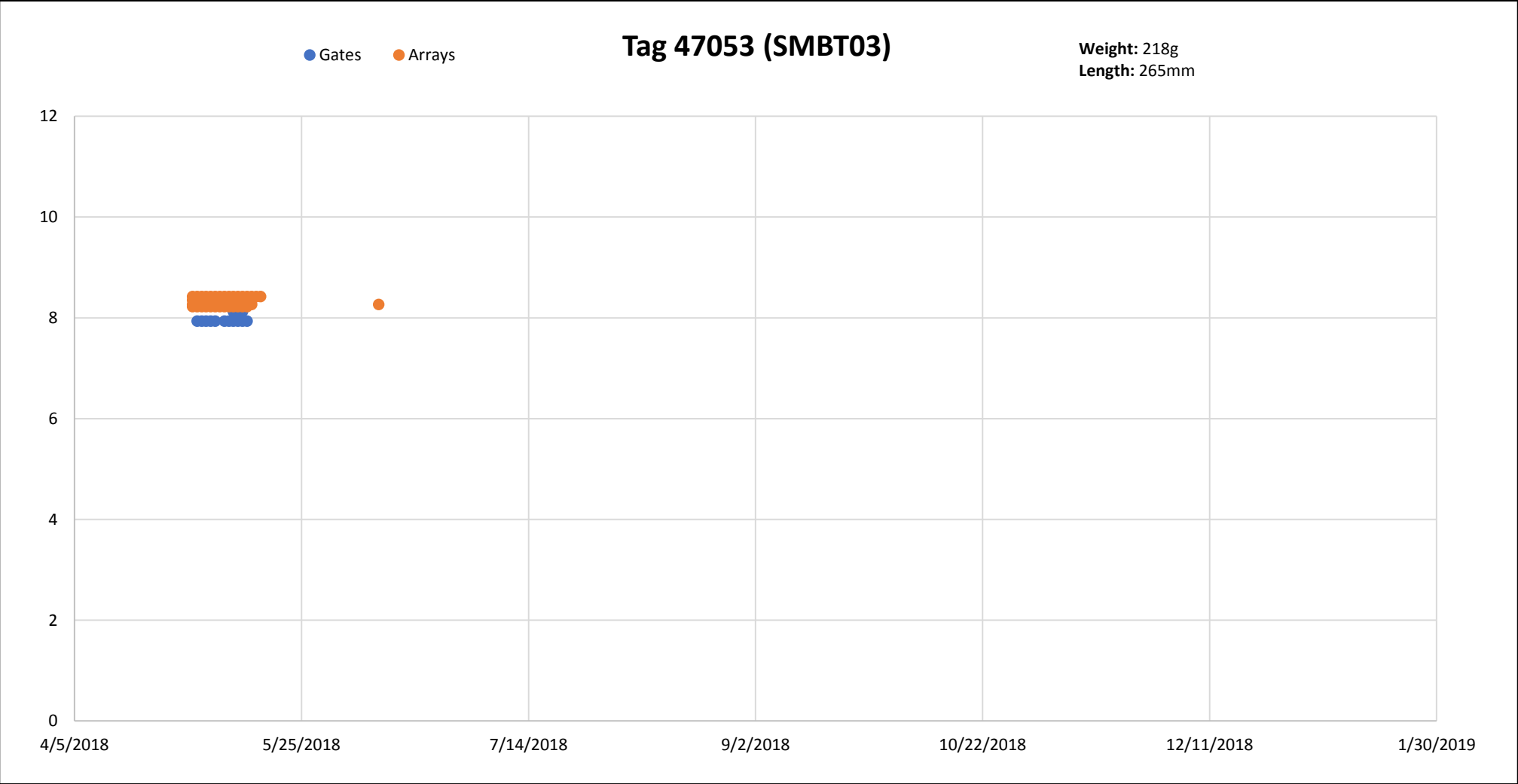
**CONFIDENTIAL WORKING DRAFT
DO NOT QUOTE OR CITE**
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part



Fish Movement for 47052, Hourly Mean, 2018
Portland Harbor Superfund Site

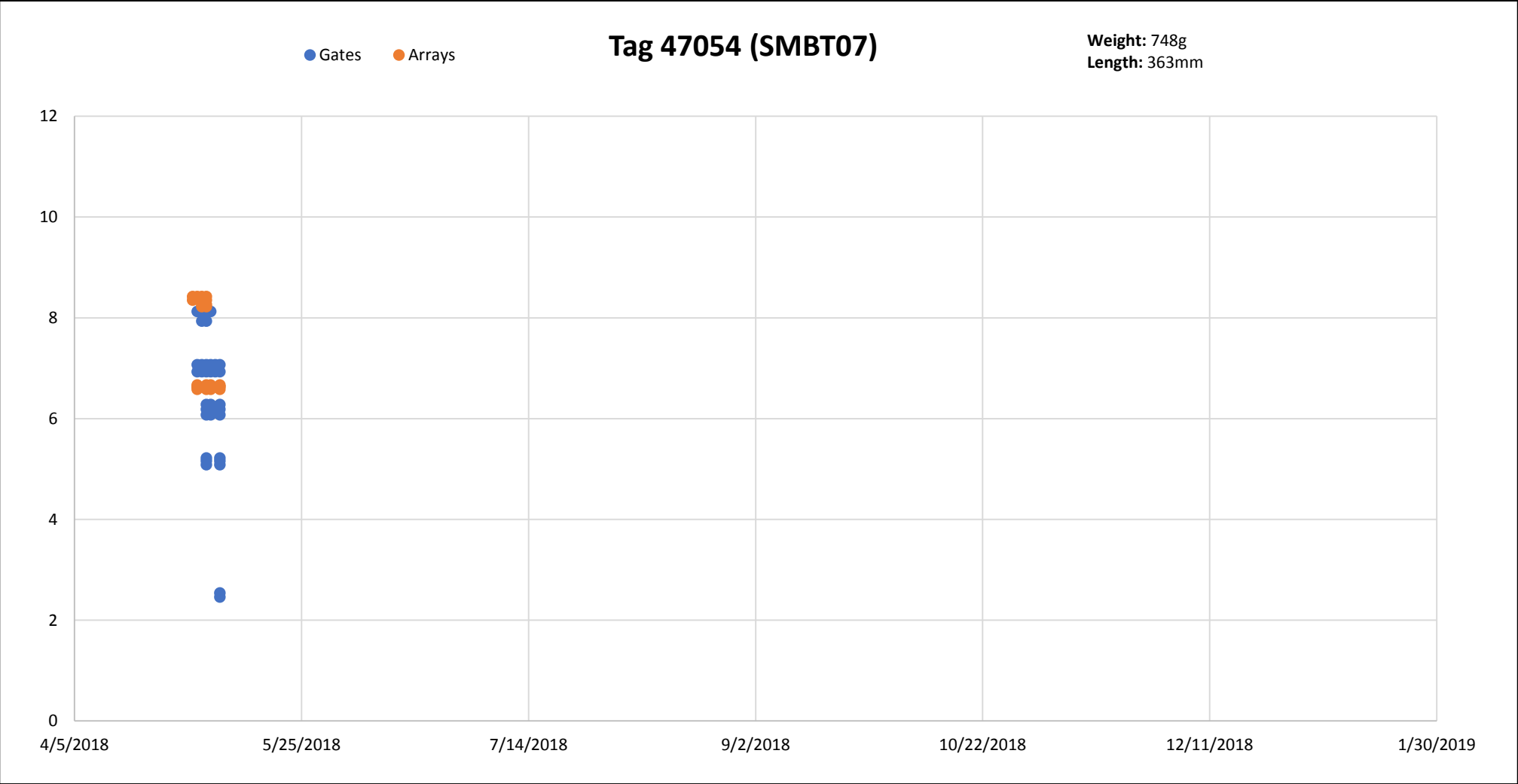
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary



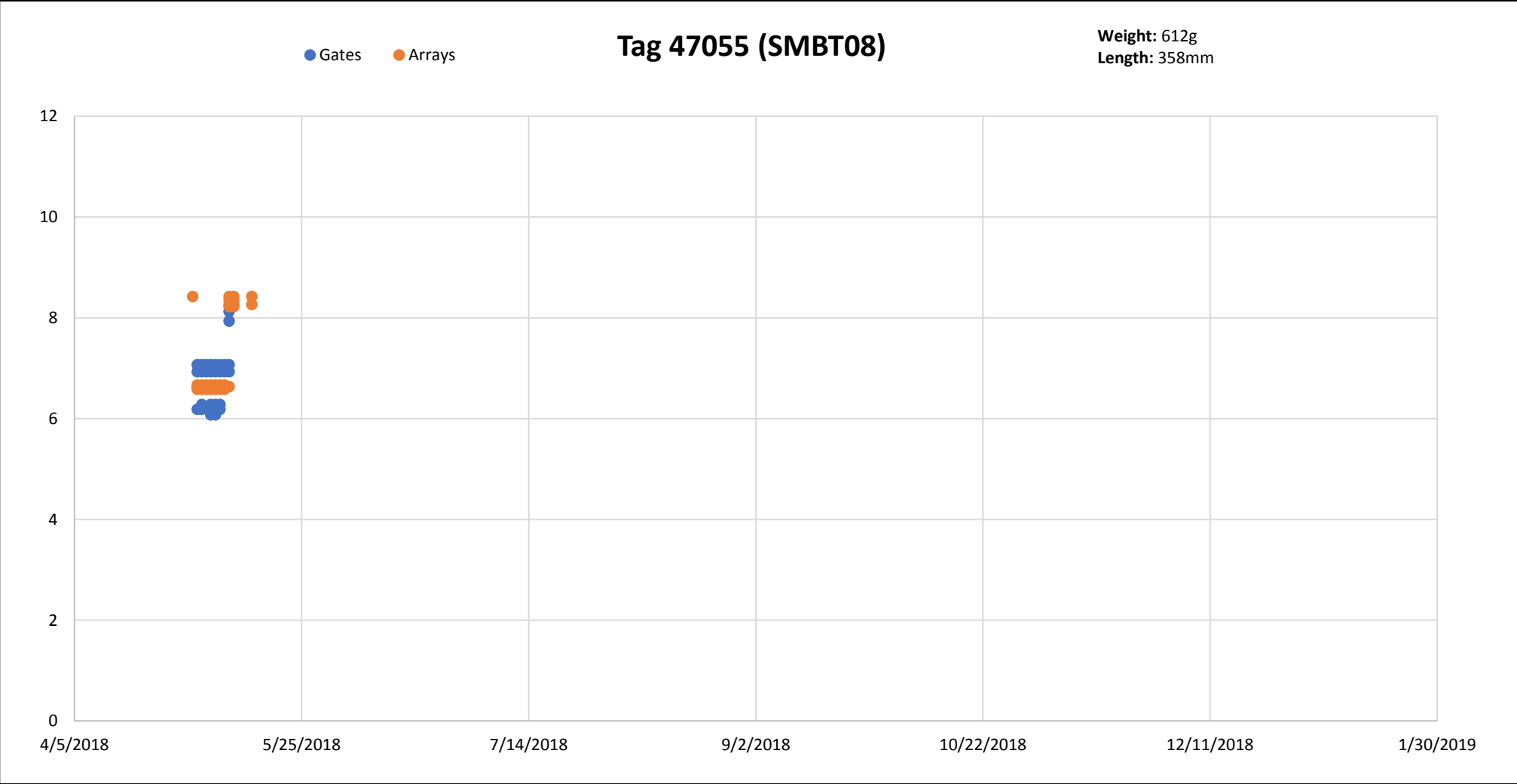
Limited fish location data for 47053 (SMBT03) from the receiver arrays. No location map developed.

Predominantly Traveling and/or Leaving Study Area



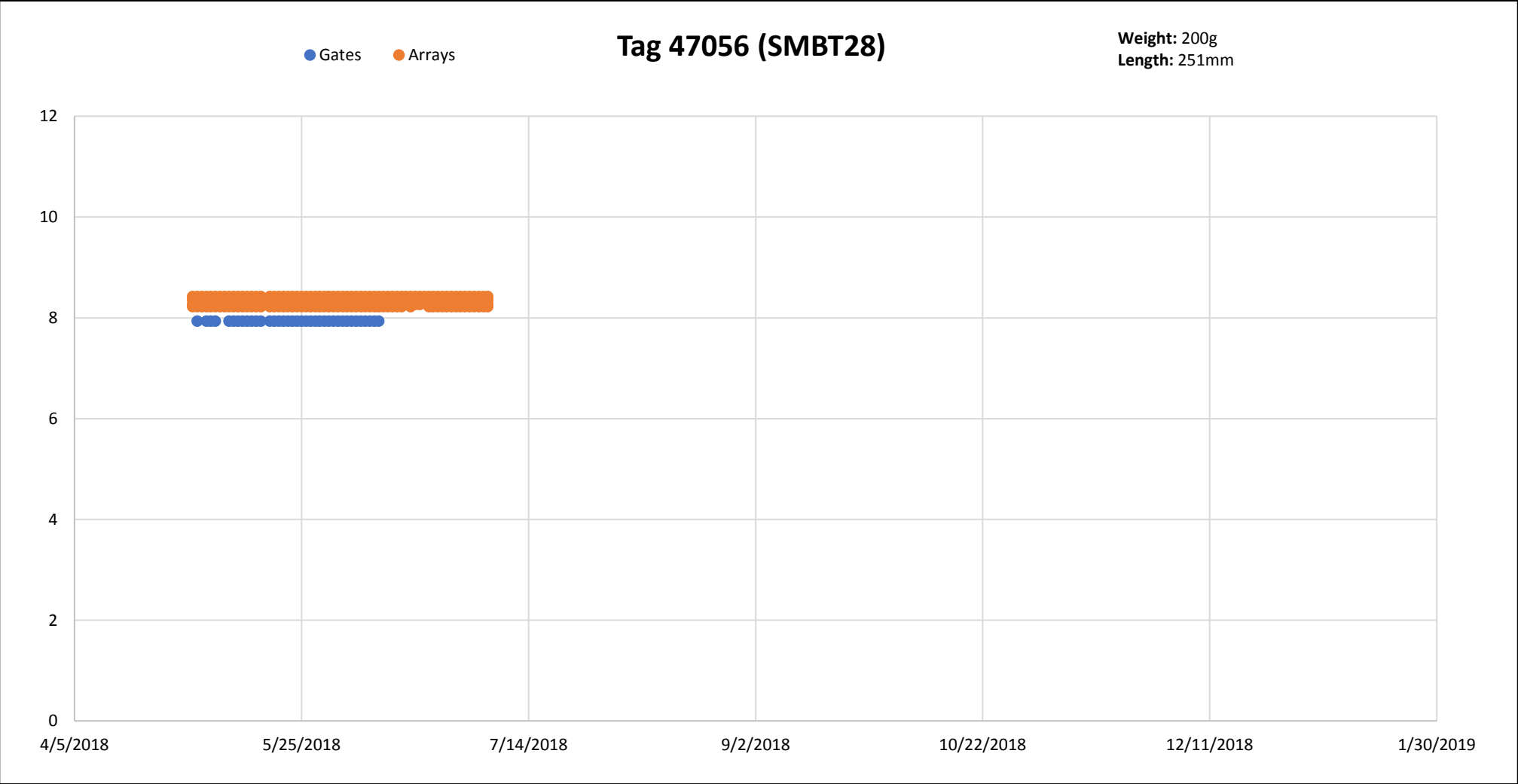
Limited fish location data for 47054 (SMBT07) from the receiver arrays. No location map developed.

Stationary with Traveling and/or Leaving Study Area

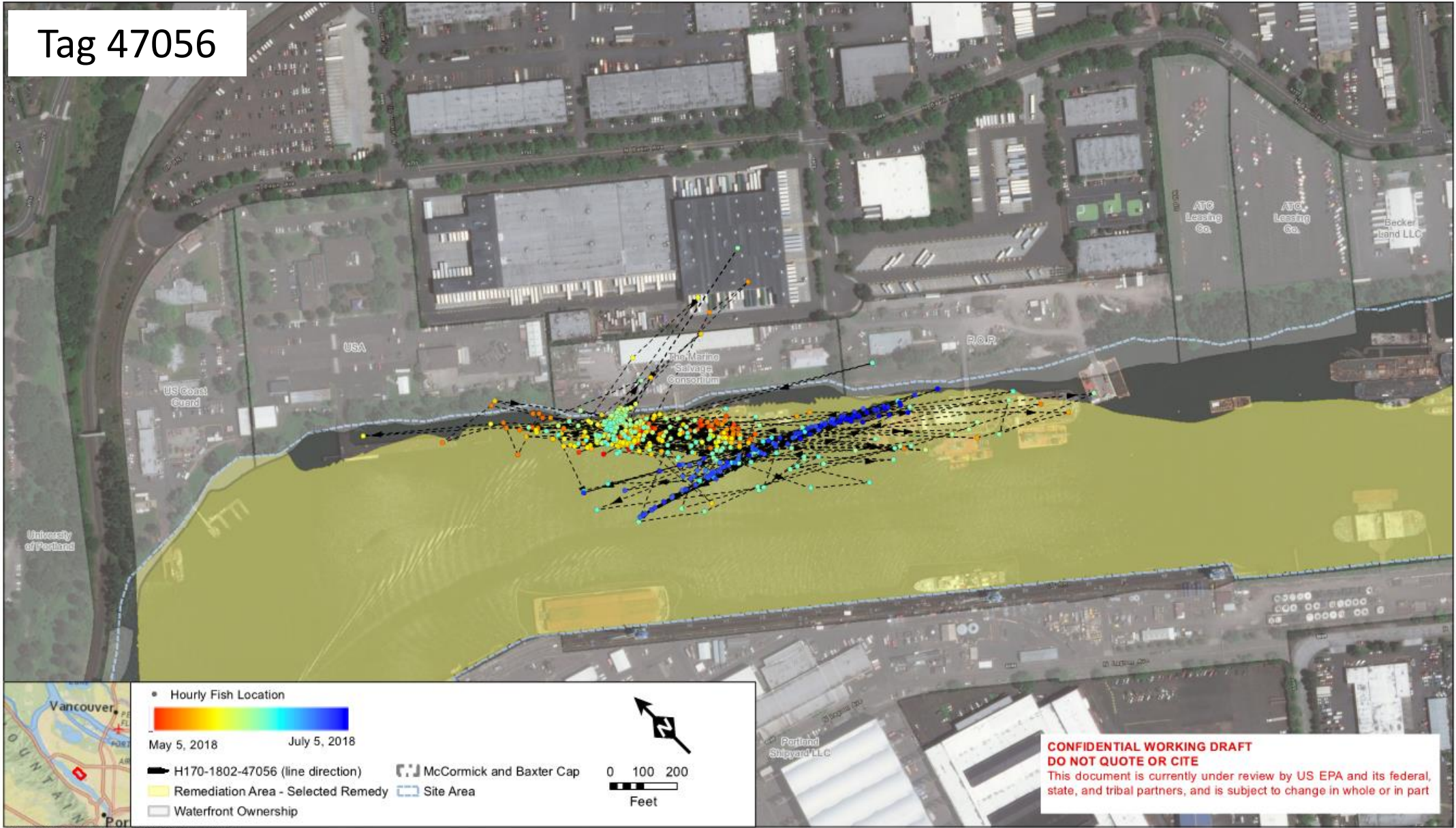


Limited fish location data for 47055 (SMBT08) from the receiver arrays. No location map developed.

Predominantly Stationary



Tag 47056

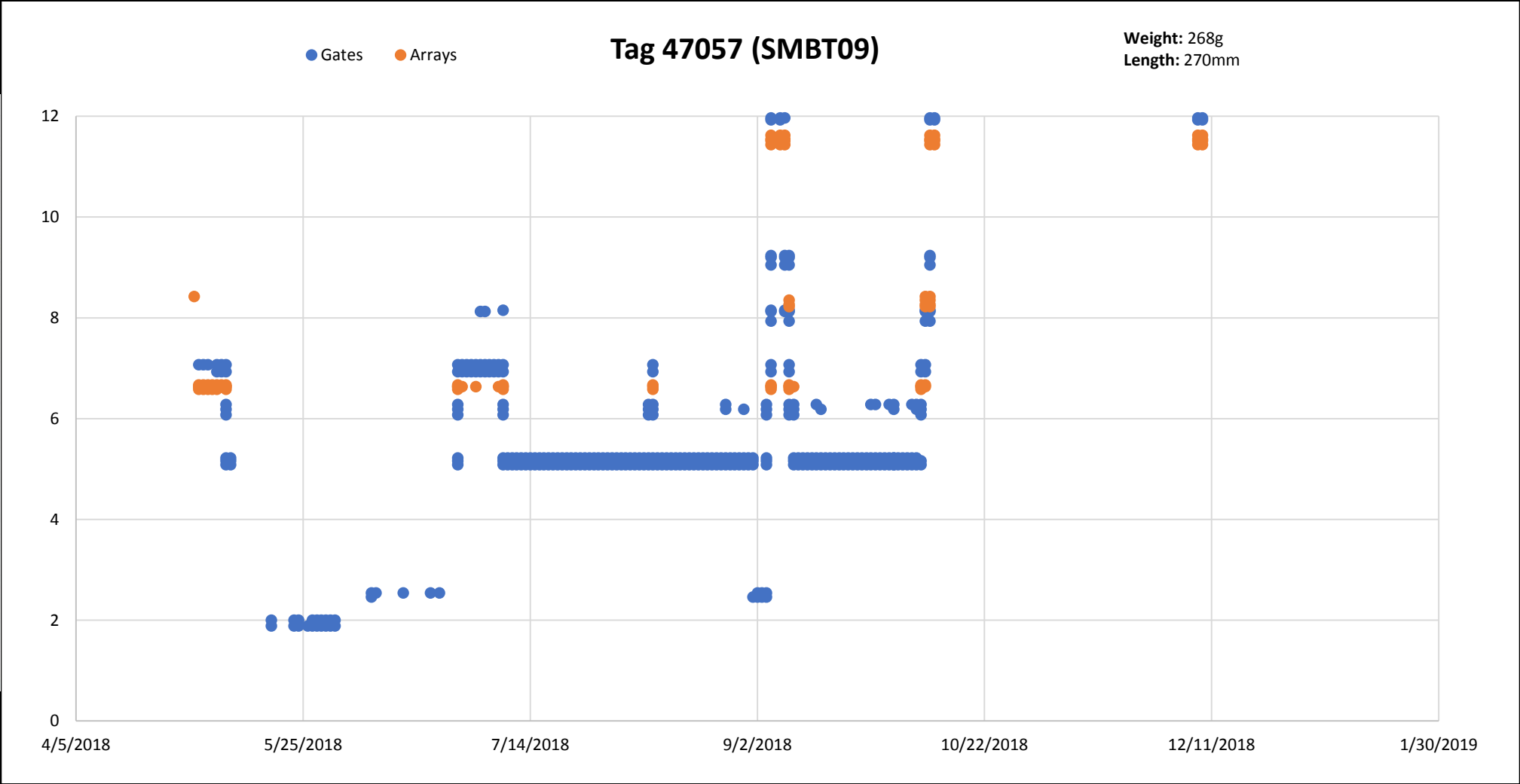


Source Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Fish Movement for 47056, Hourly Mean
Portland Harbor Superfund Site

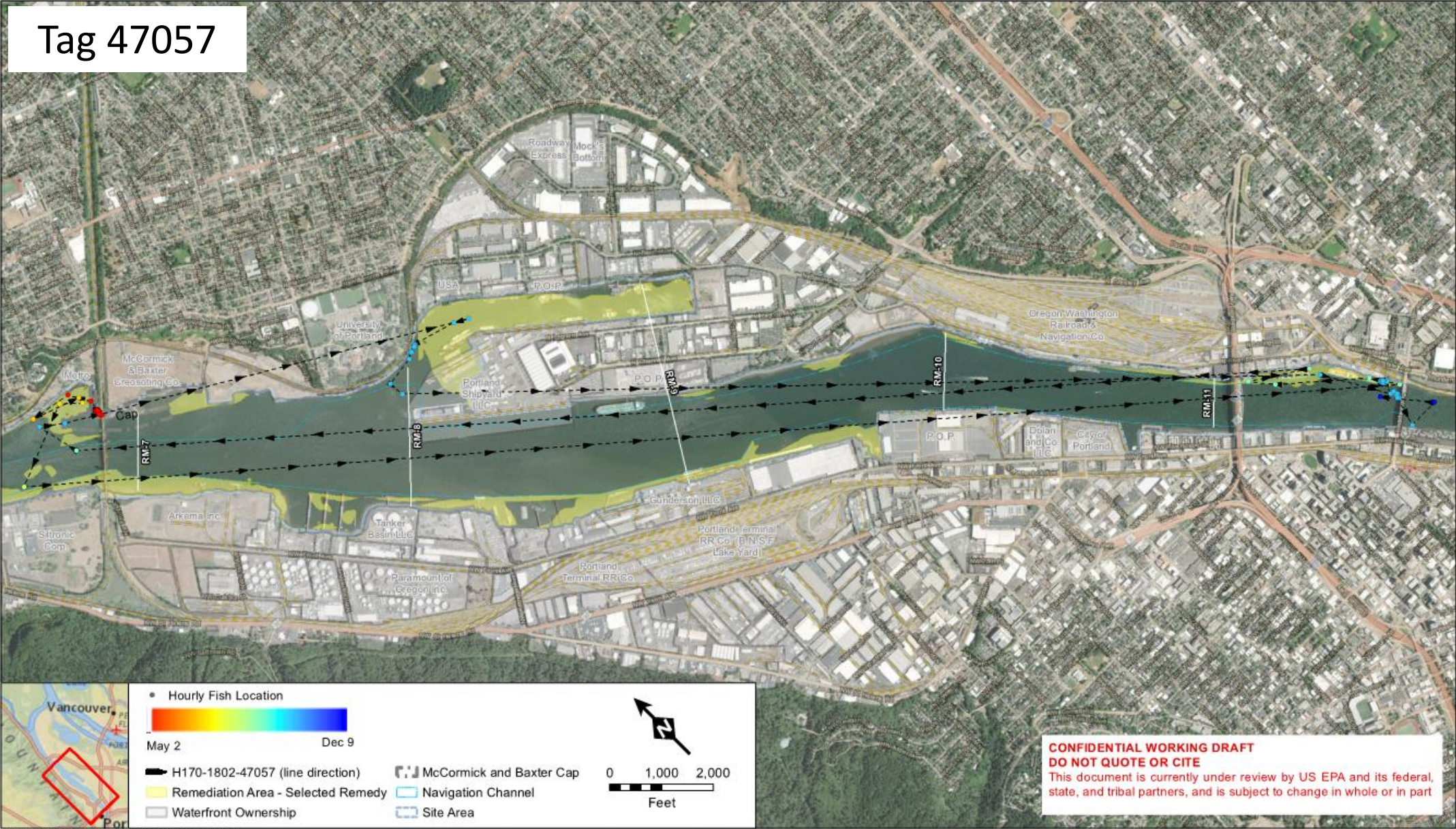
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Stationary with Traveling and/or Leaving Study Area



Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

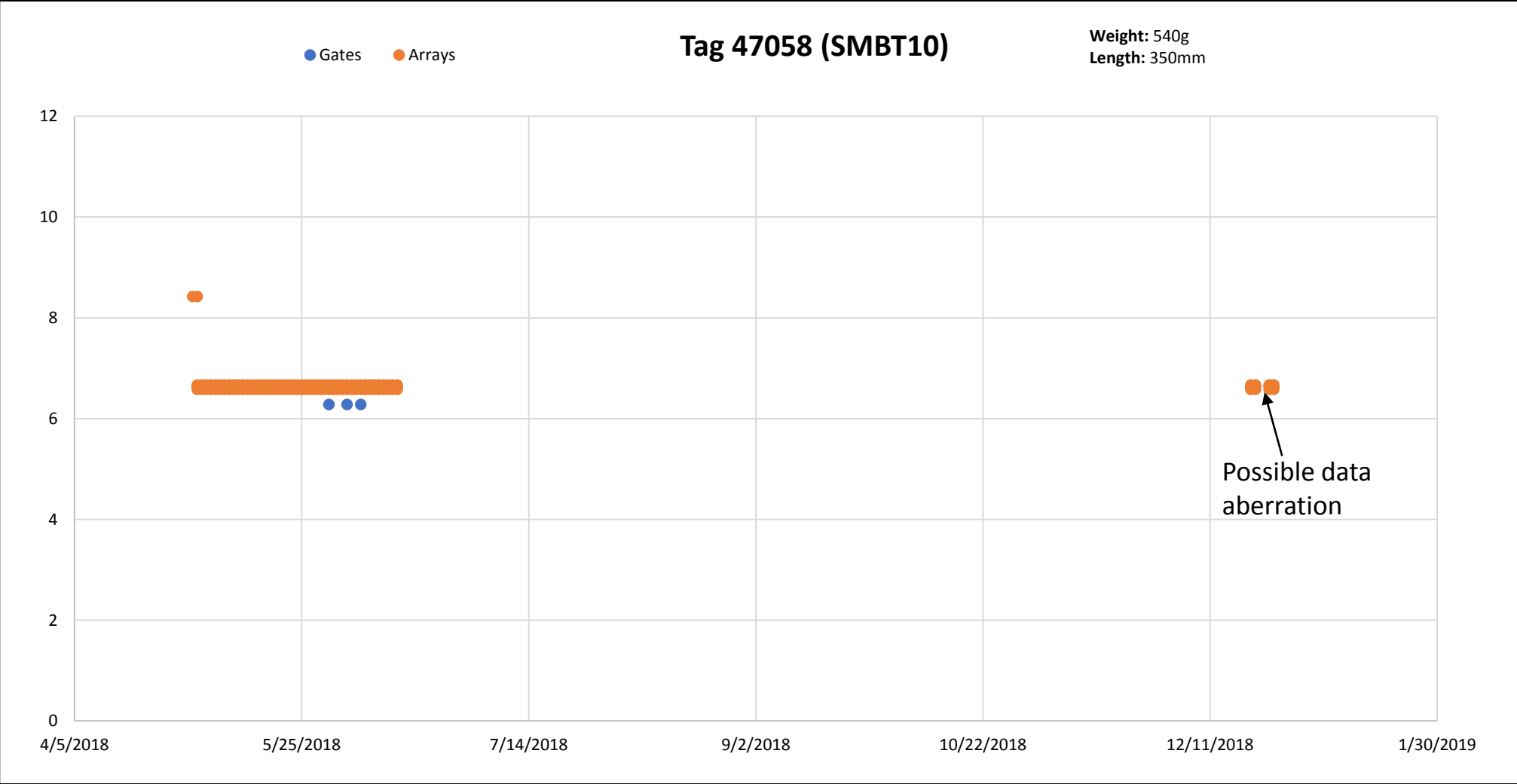
Tag 47057



Fish Movement for 47057, Hourly Mean, 2018
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary

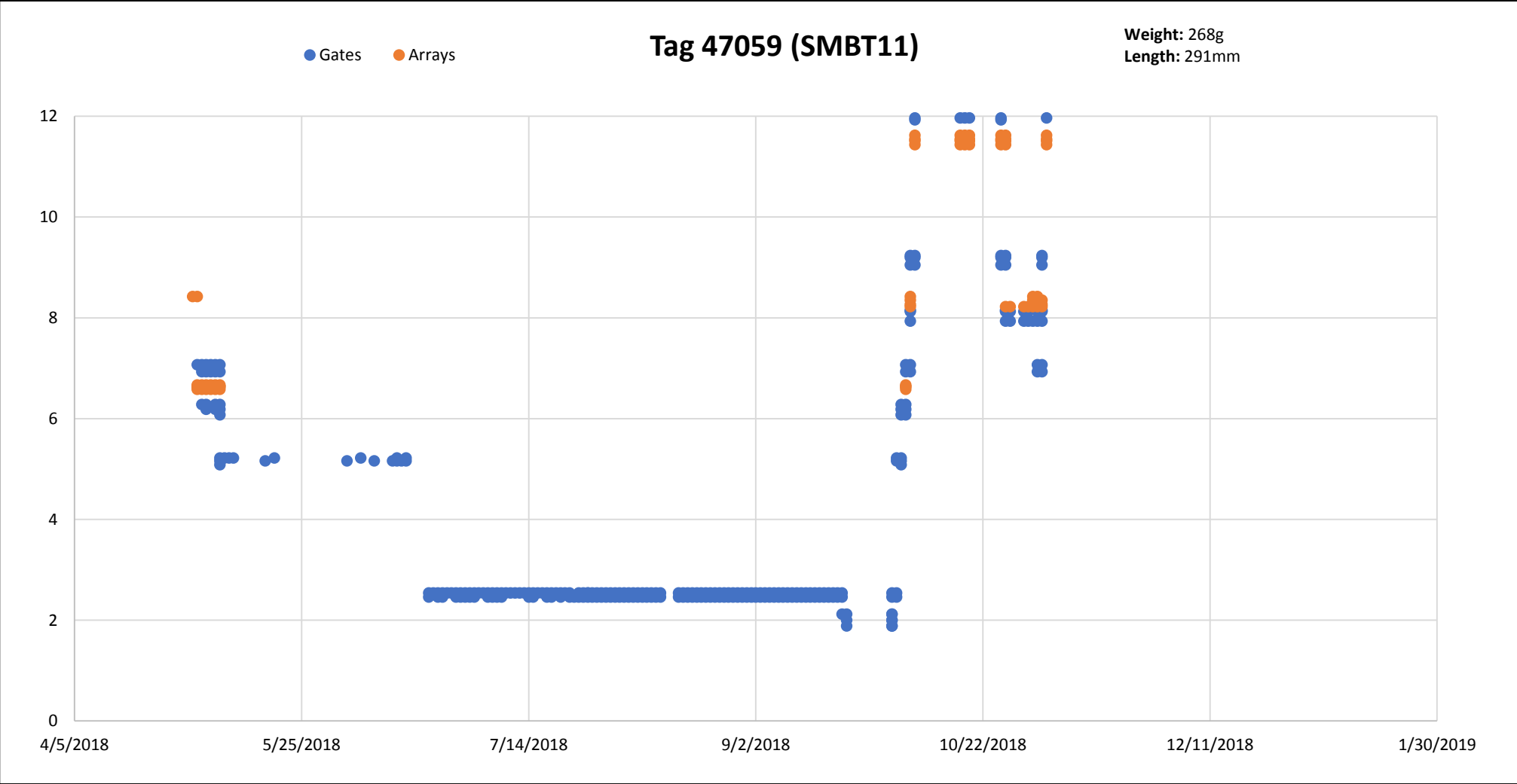




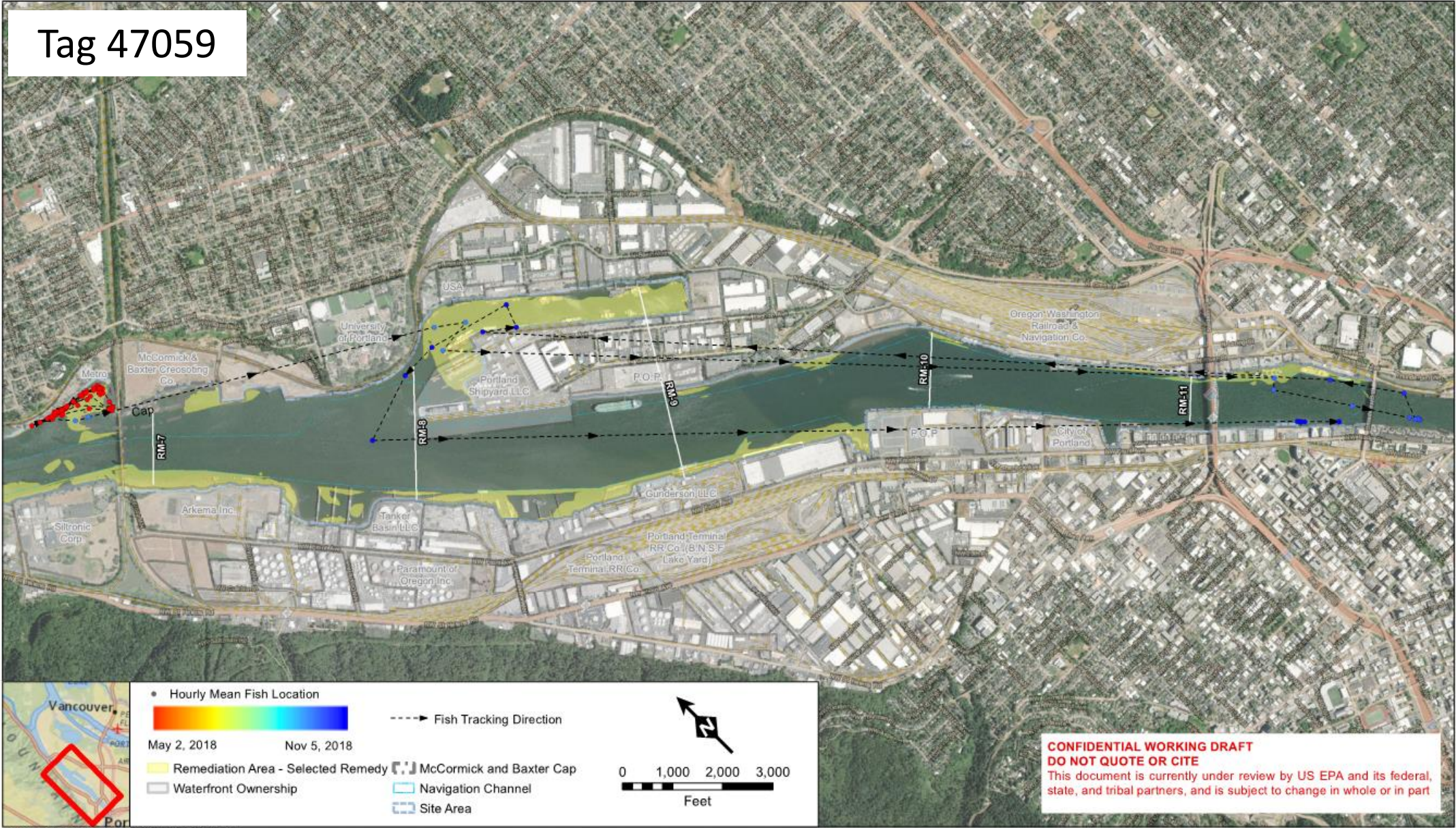
Fish Movement for 47058, Hourly Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Stationary with Traveling and/or Leaving Study Area



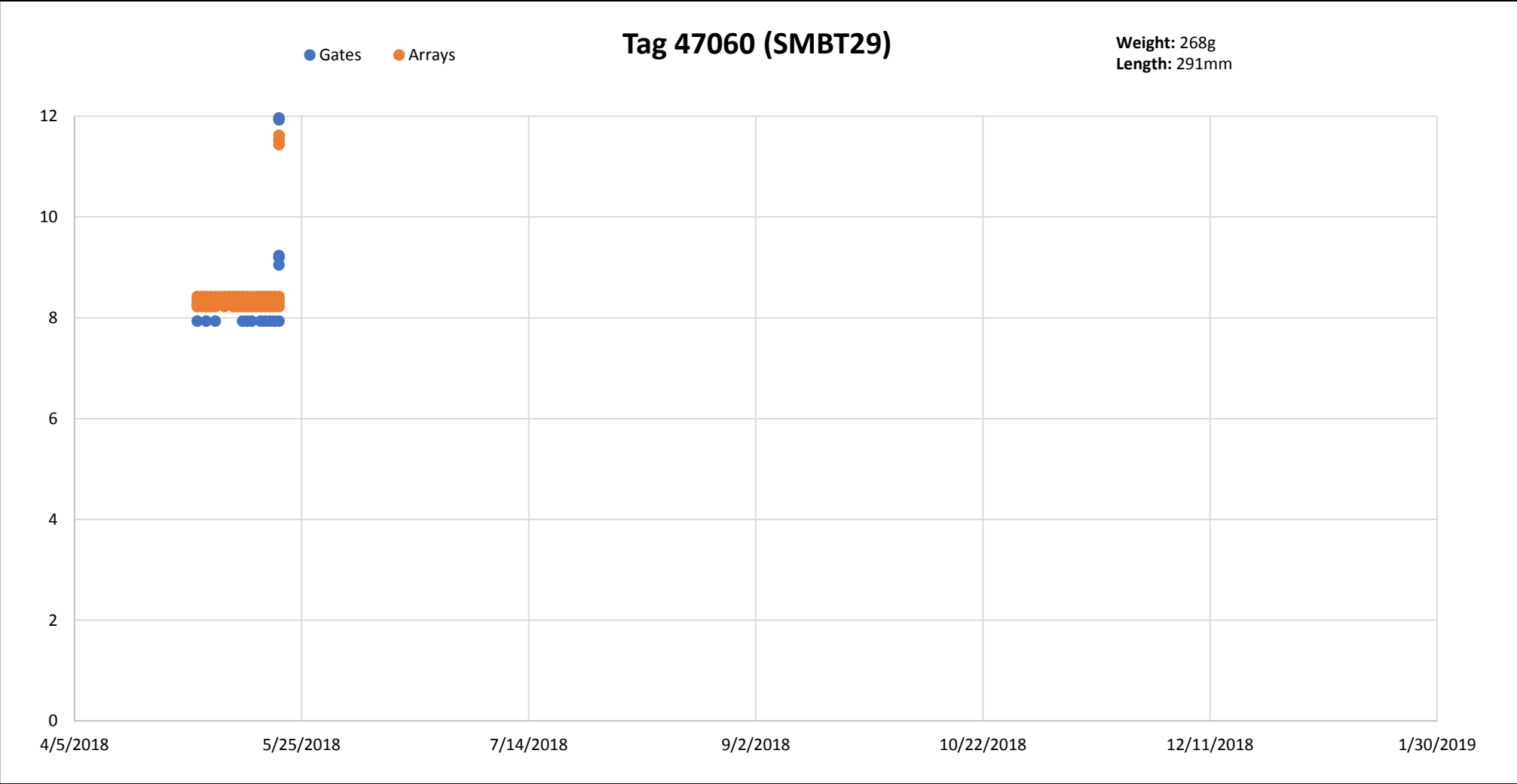
Tag 47059



Fish Movement for 47059, Hourly Mean
Portland Harbor Superfund Site

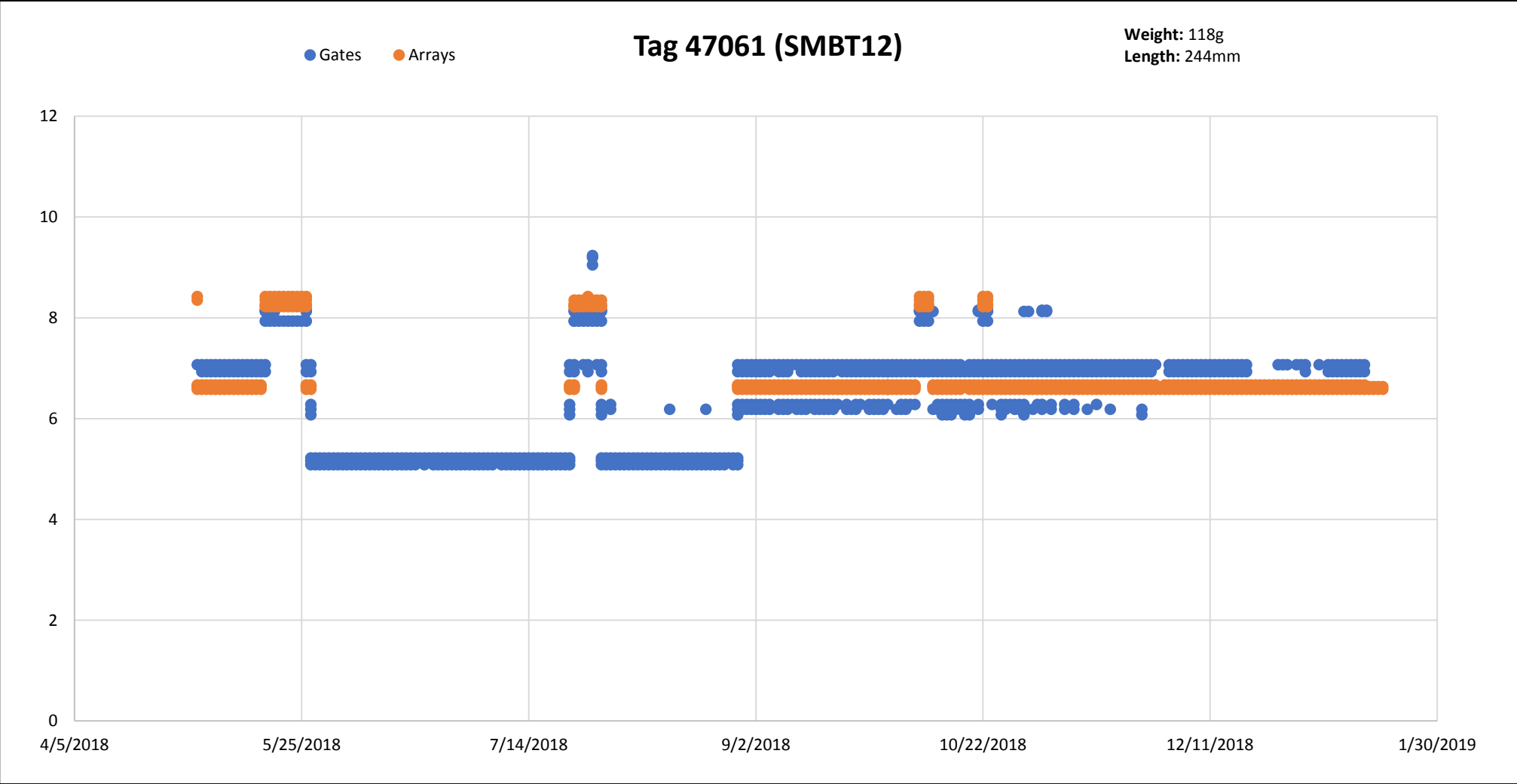
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Stationary with Traveling and/or Leaving Study Area

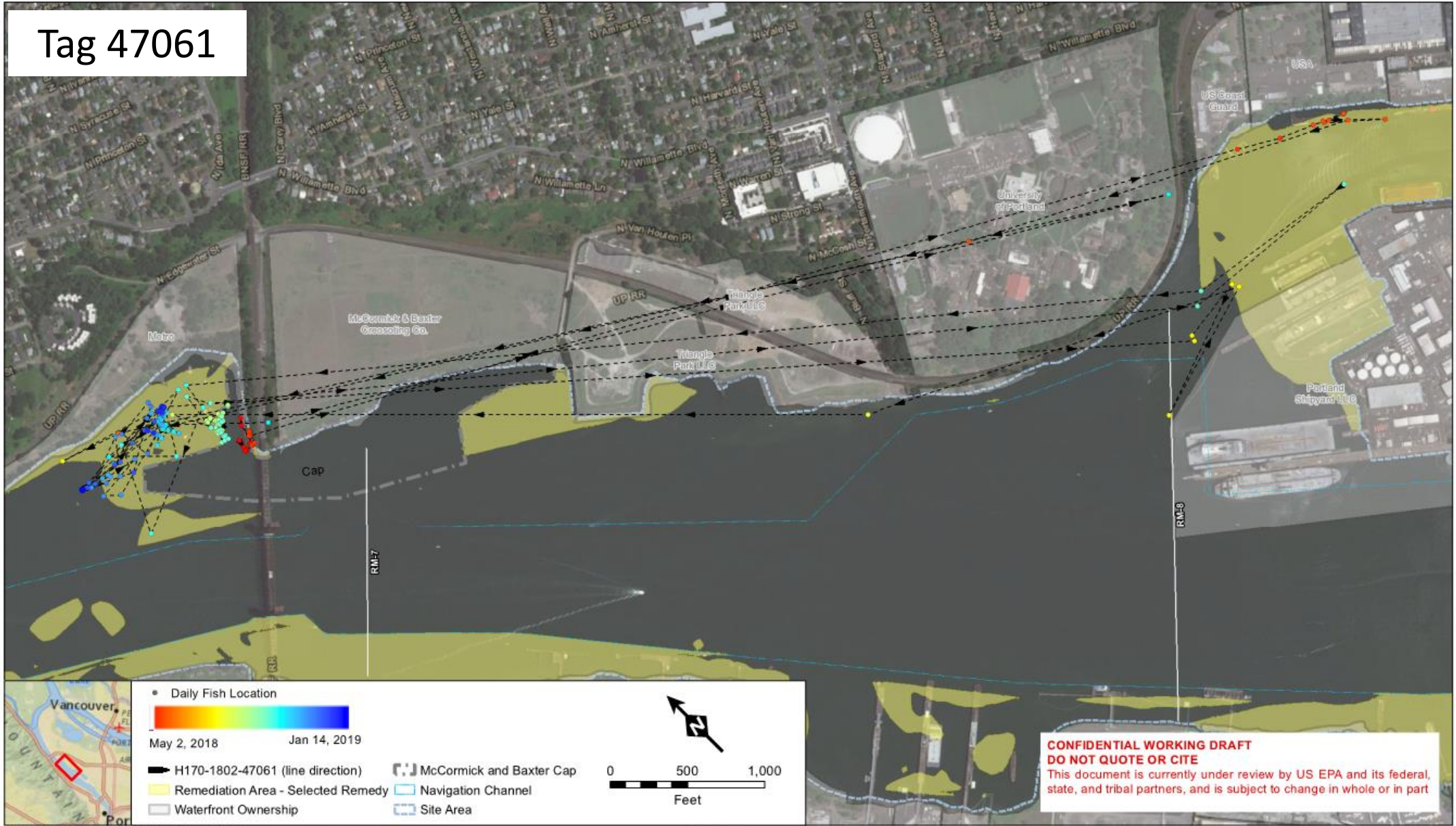


Limited fish location data for 47060 (SMBT29) from the receiver arrays. No location map developed.

Stationary with Traveling and/or Leaving Study Area



Tag 47061

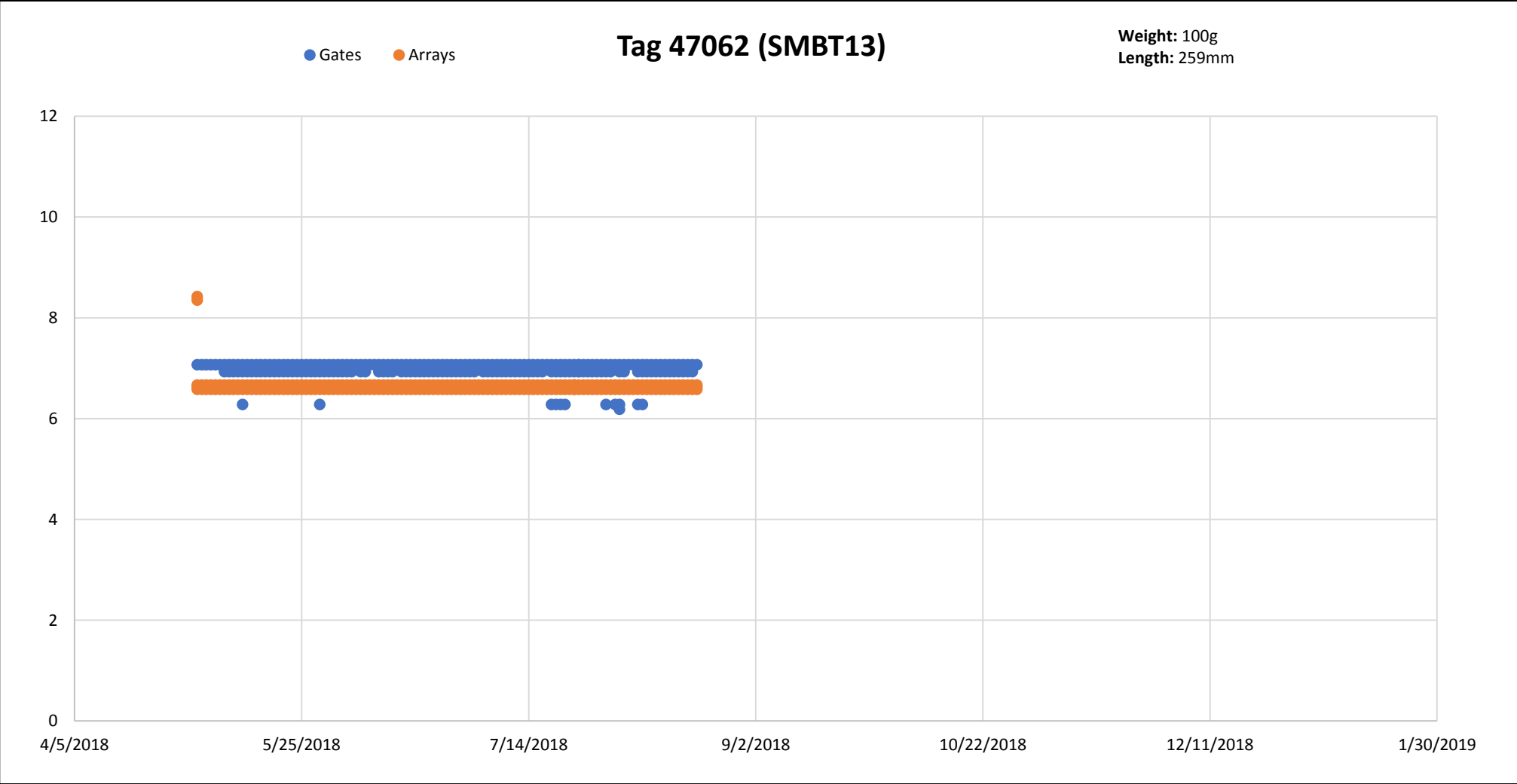


Source Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

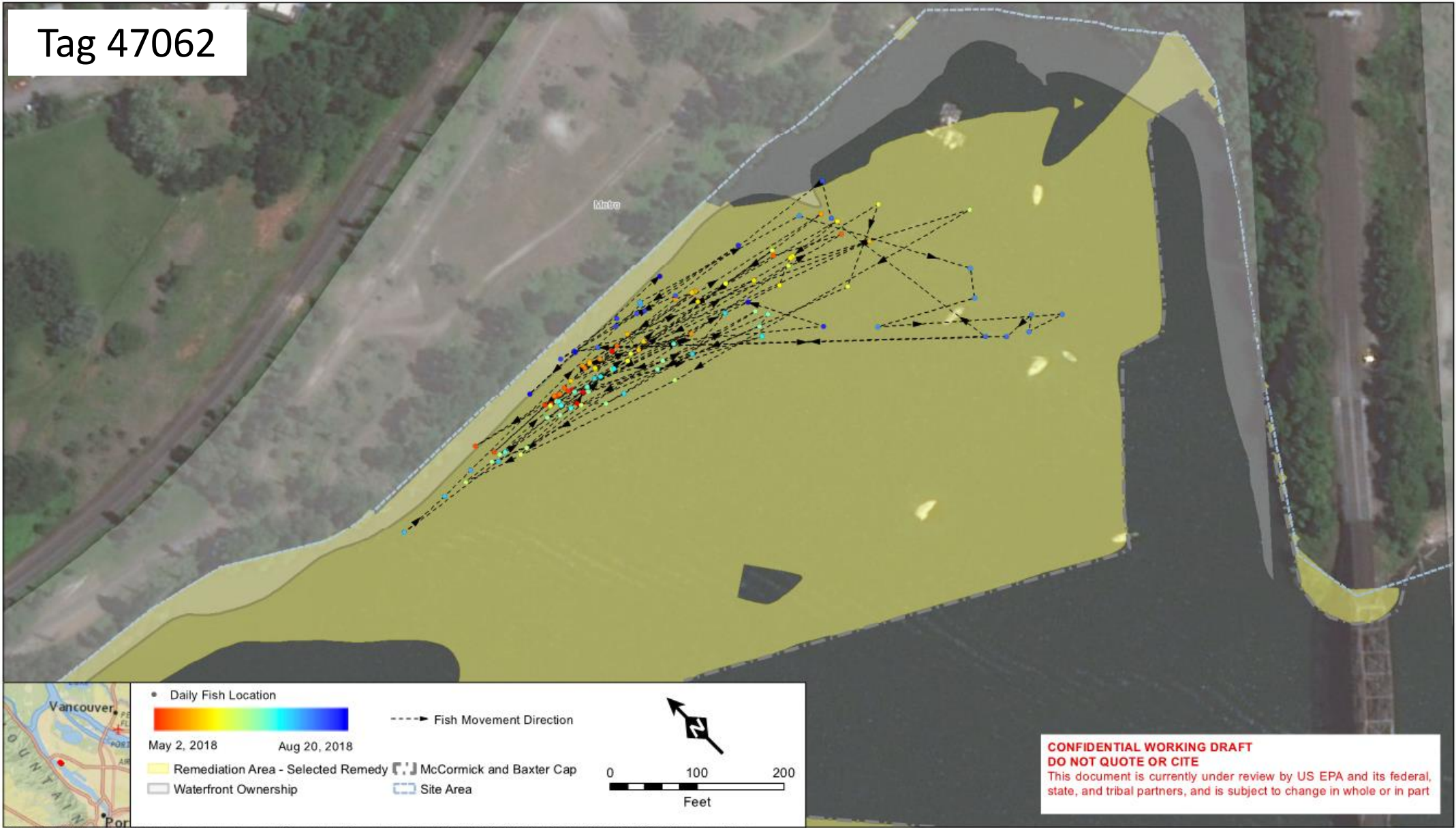
Fish Movement for 47061, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary



Tag 47062

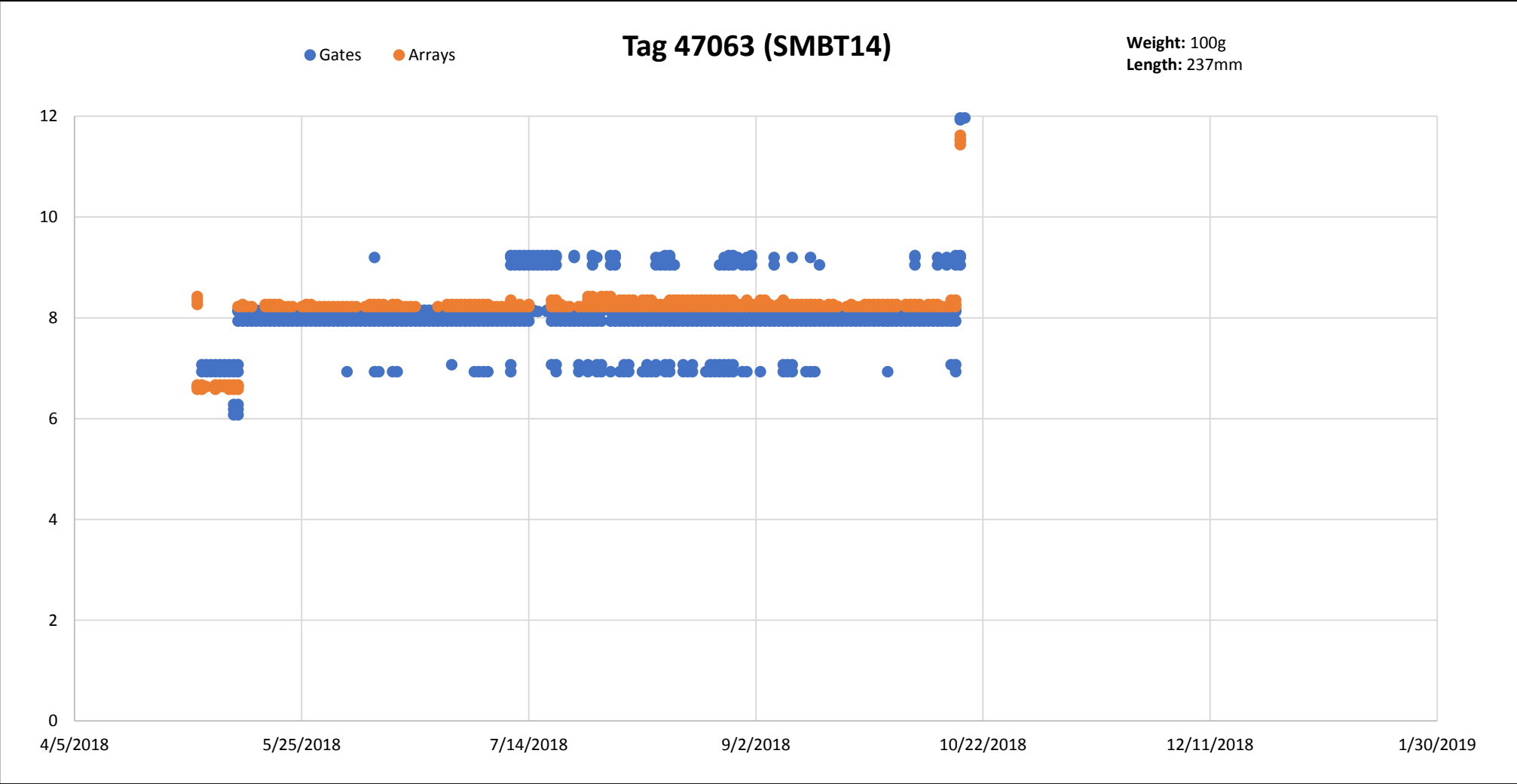


Source Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, Increment P Corp.

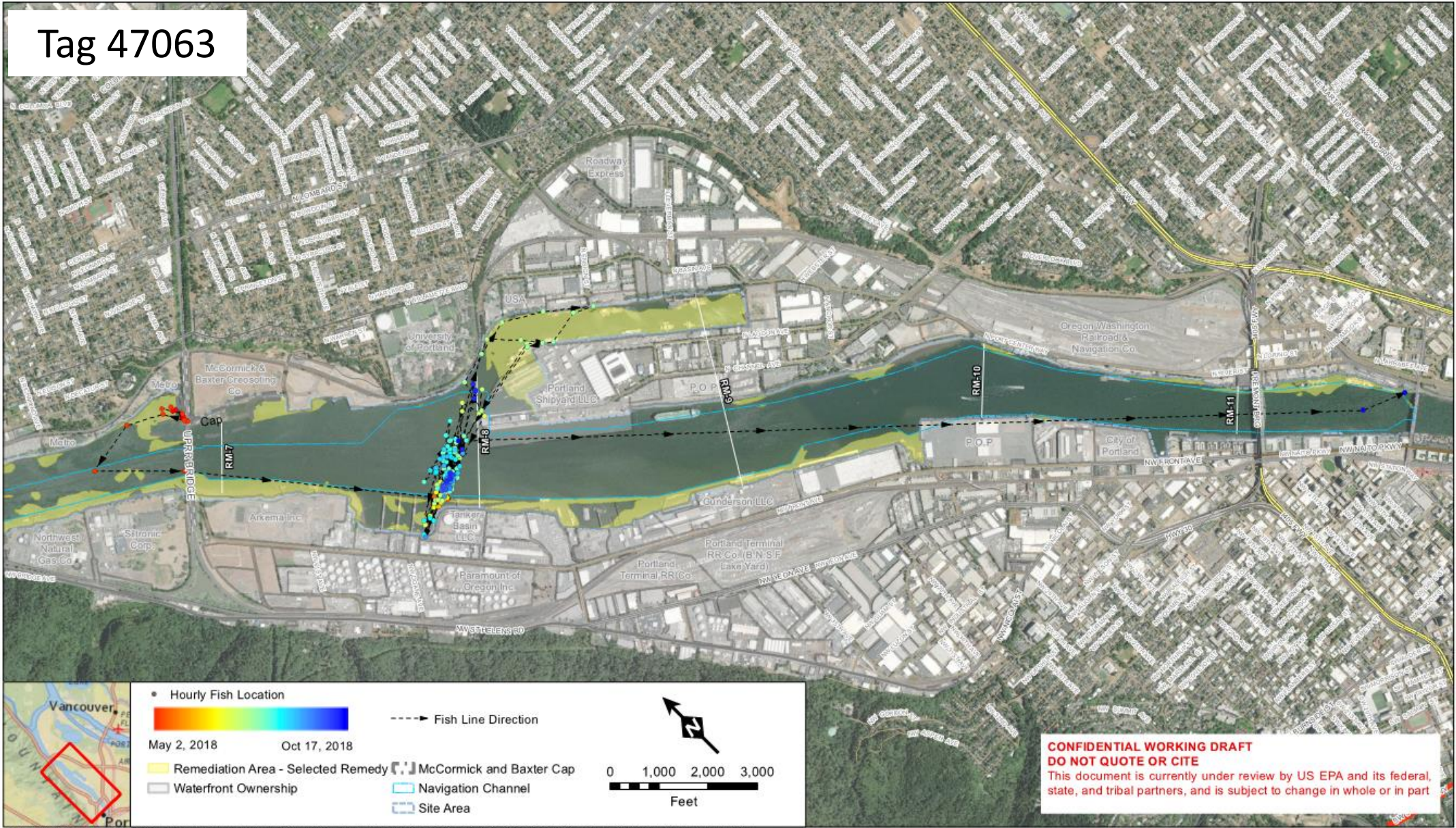
Fish Movement for 47062, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Stationary with Traveling and/or Leaving Study Area



Tag 47063



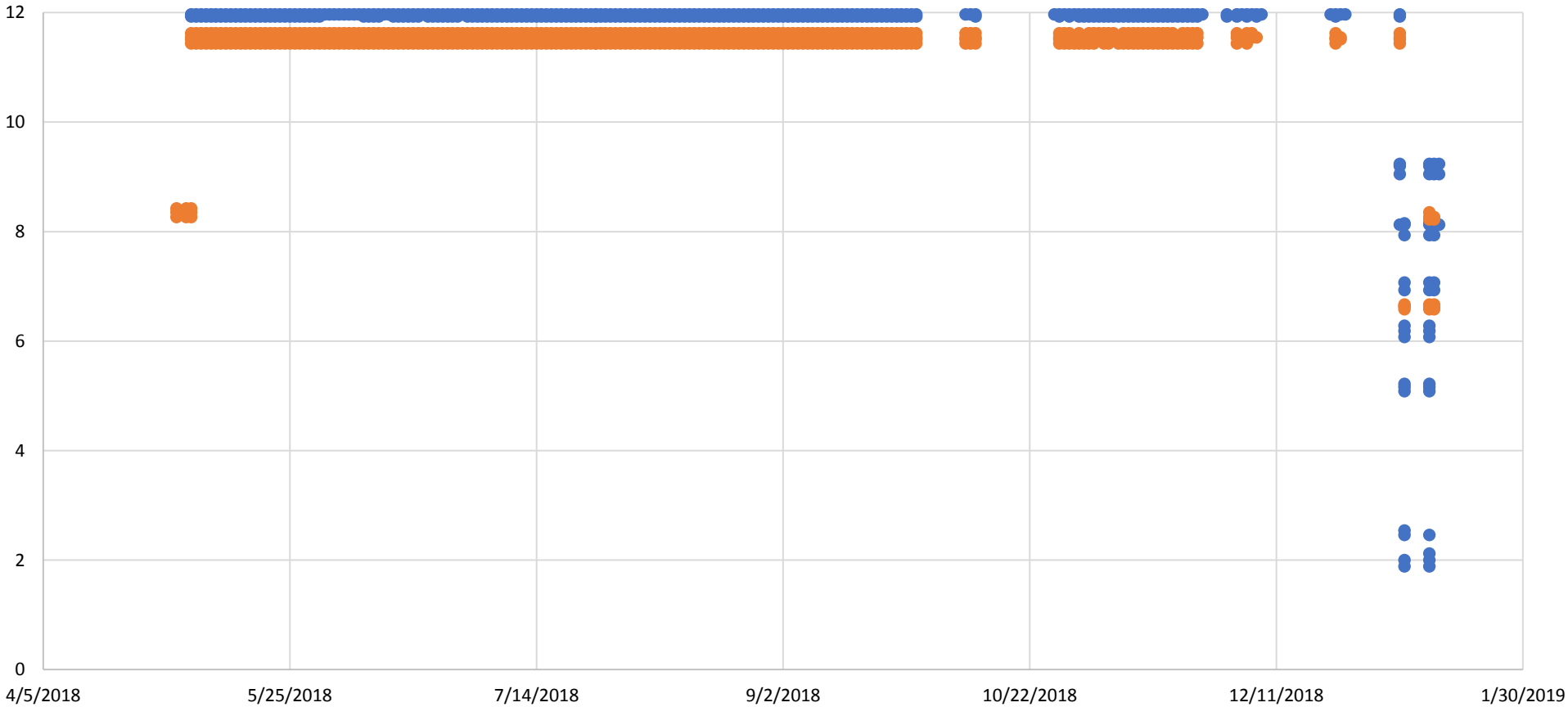
Source Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, Increment P Corp.

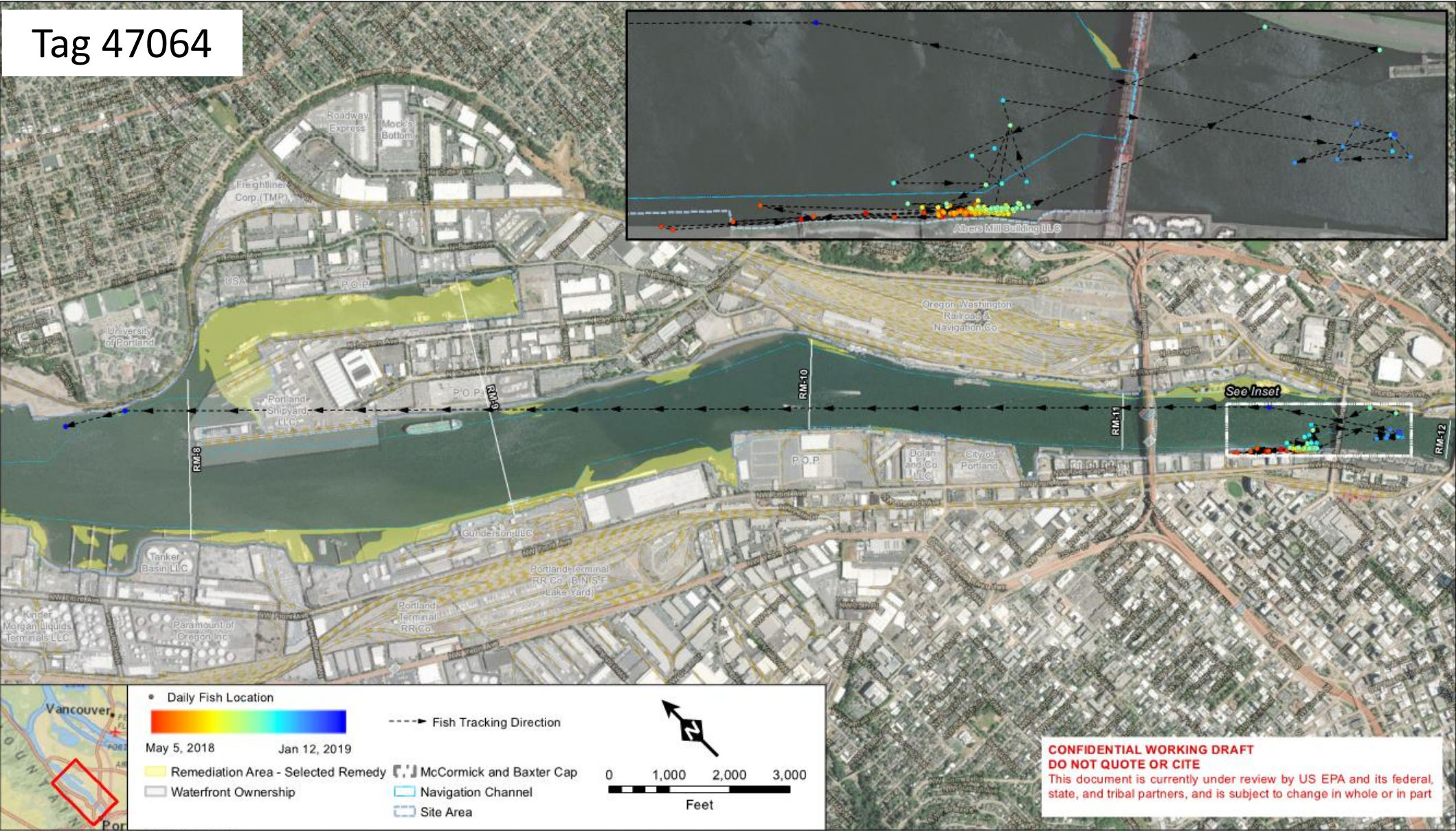
Fish Movement for 47063, Hourly Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote
or cite. For internal MOU purposes only.

● Gates ● Arrays

Weight: 259g
Length: 255mm

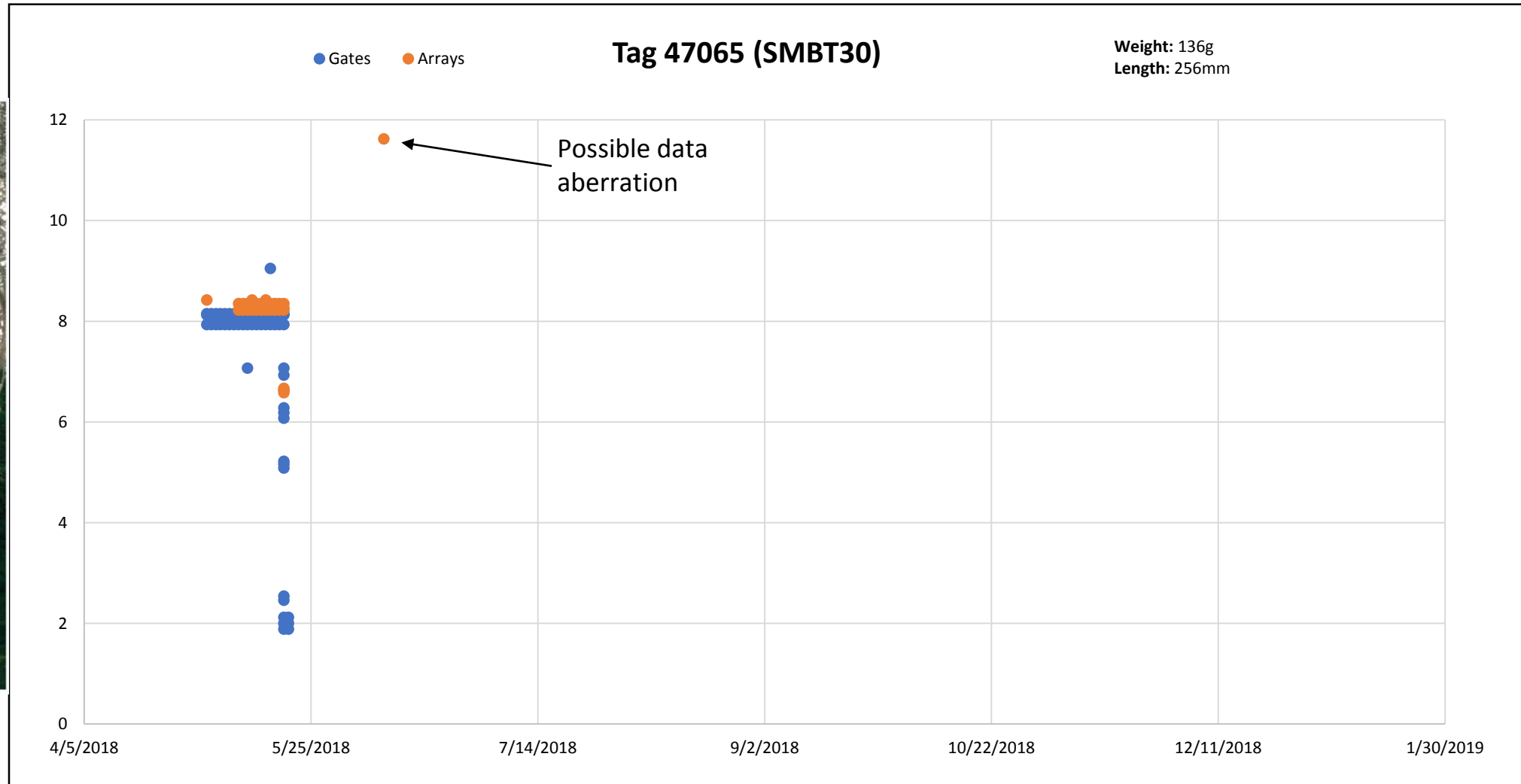




Fish Movement for 47064, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

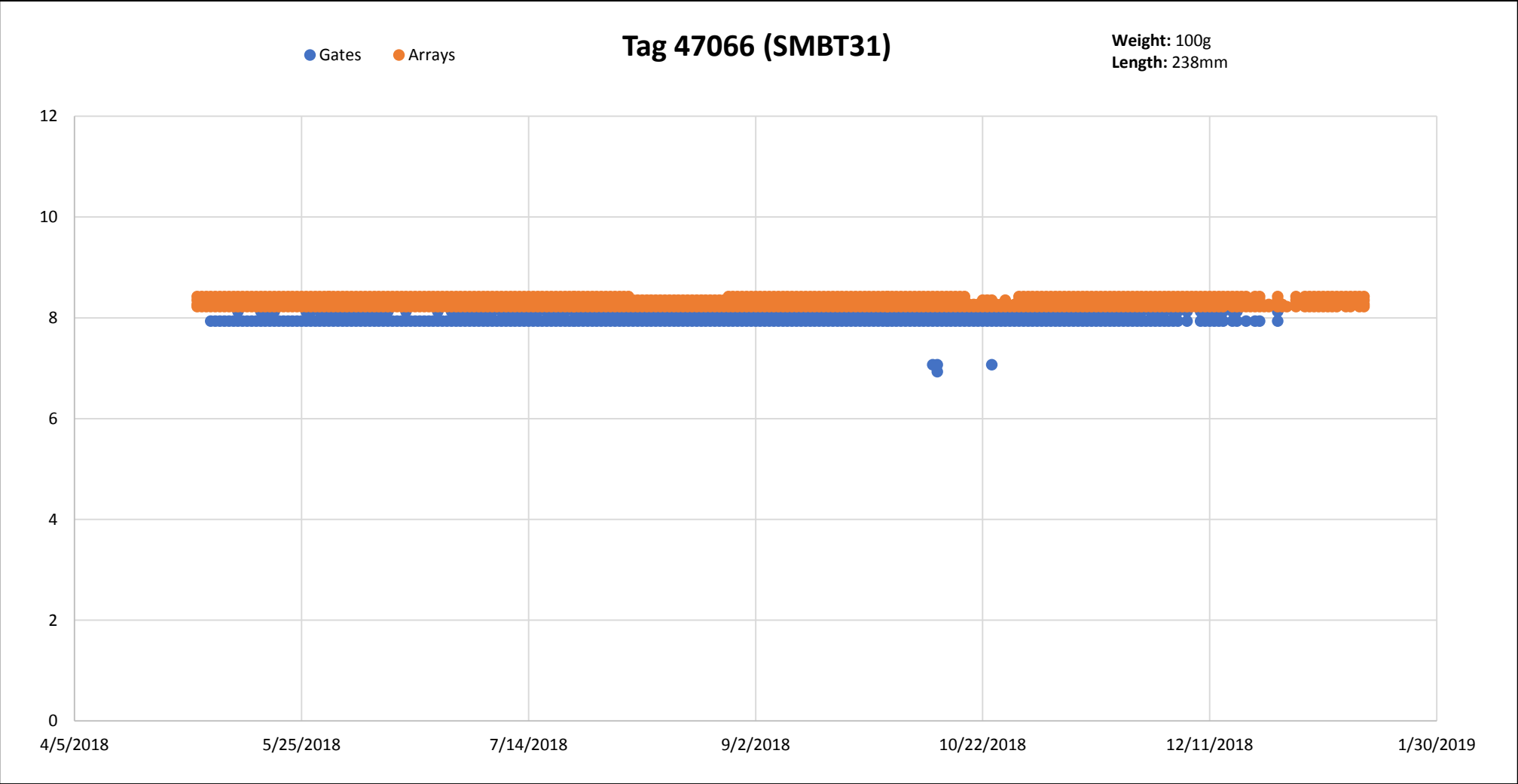
Stationary with Traveling and/or Leaving Study Area

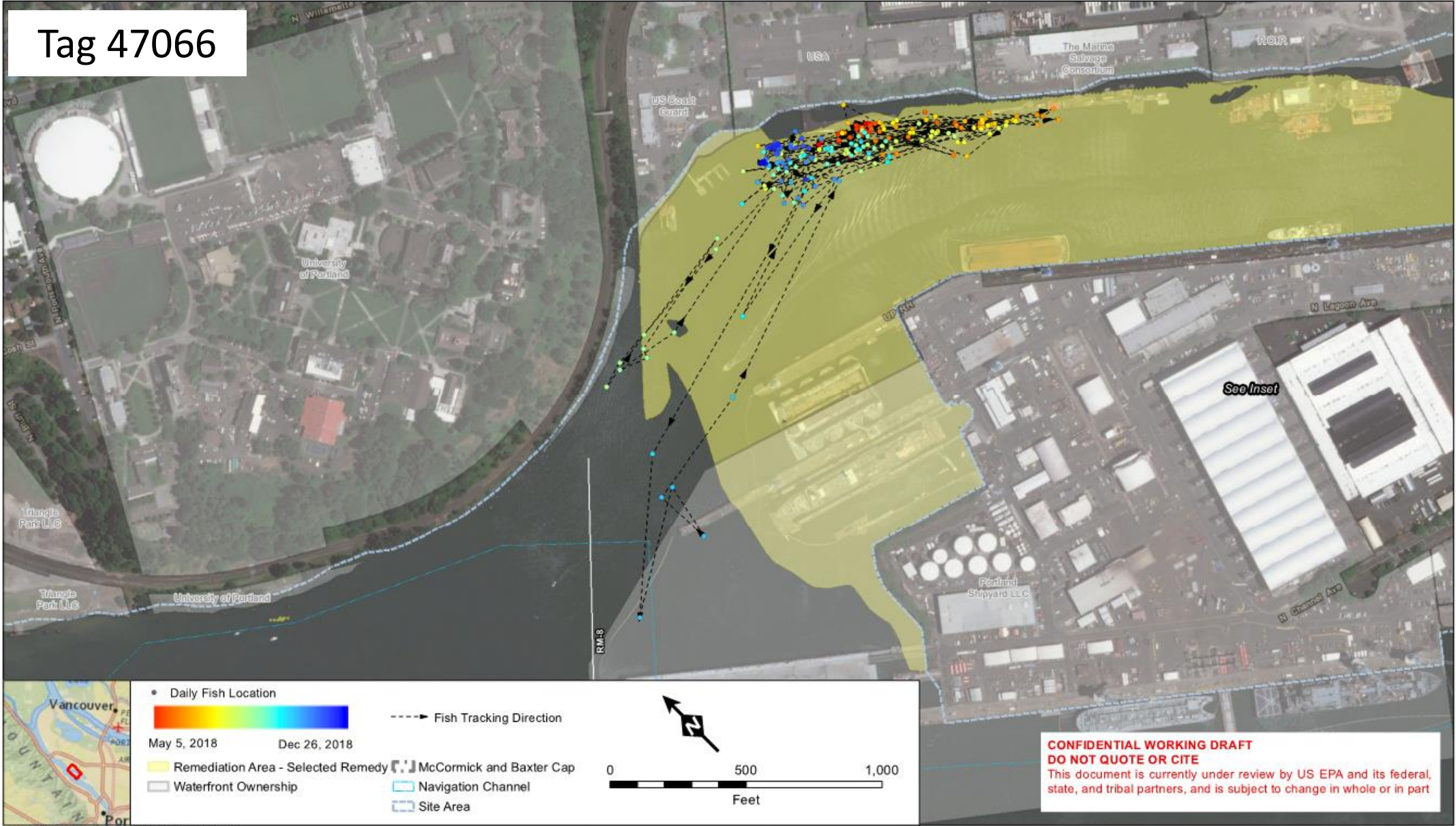


Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Limited fish location data for 47065 (SMBT30) from the receiver arrays. No location map developed.

Predominantly Stationary

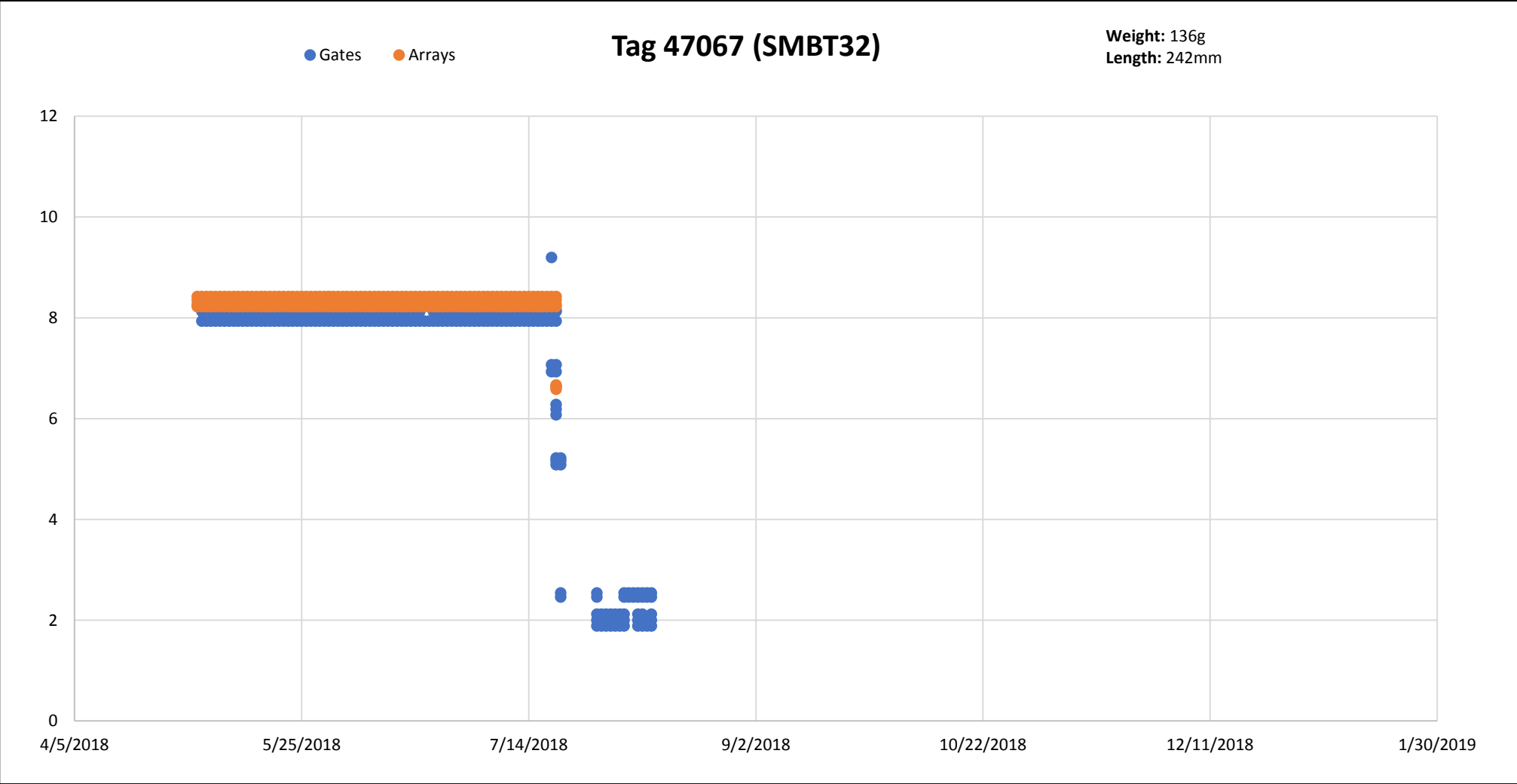


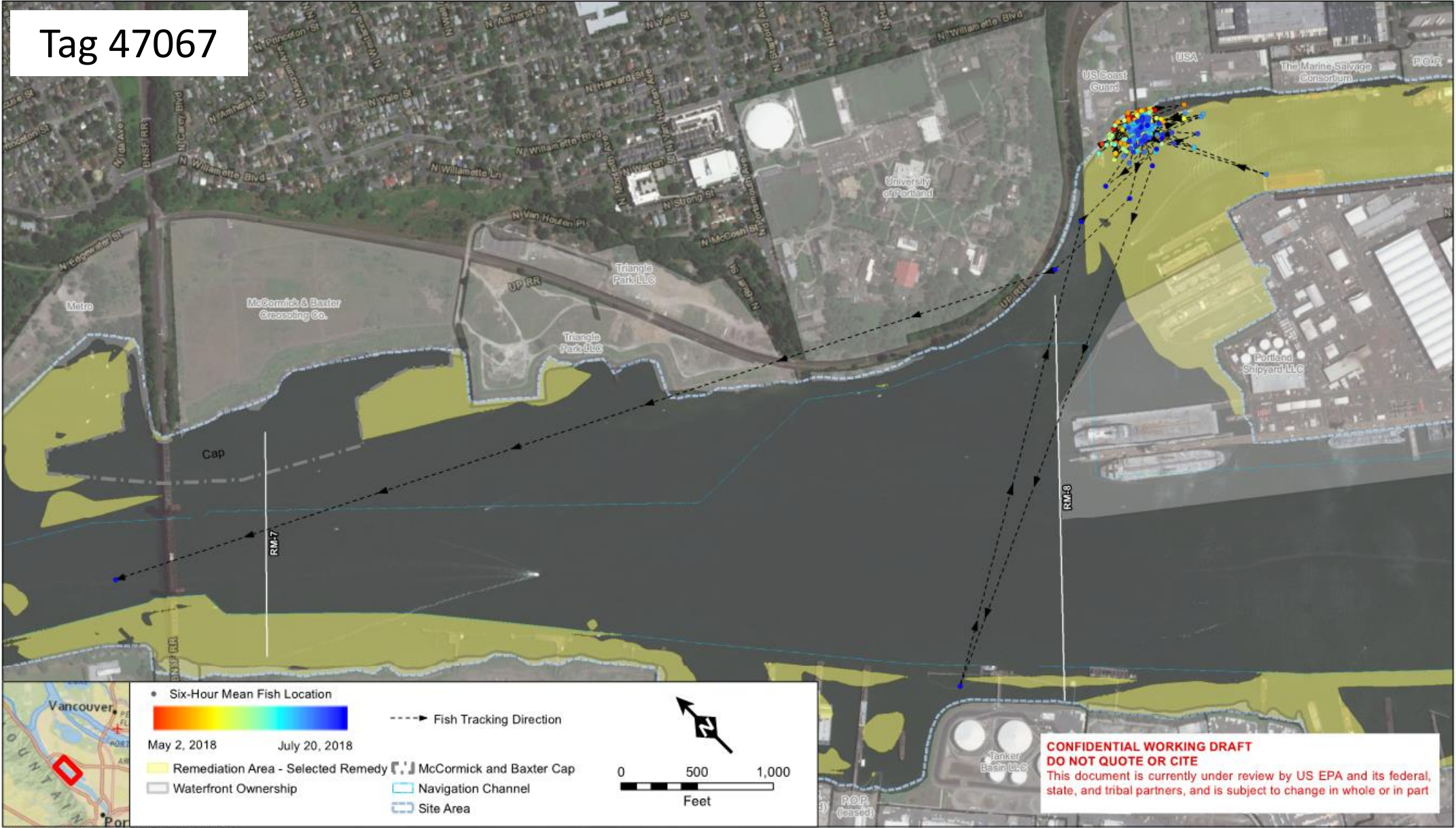


Fish Movement for 47066, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Stationary with Traveling and/or Leaving Study Area

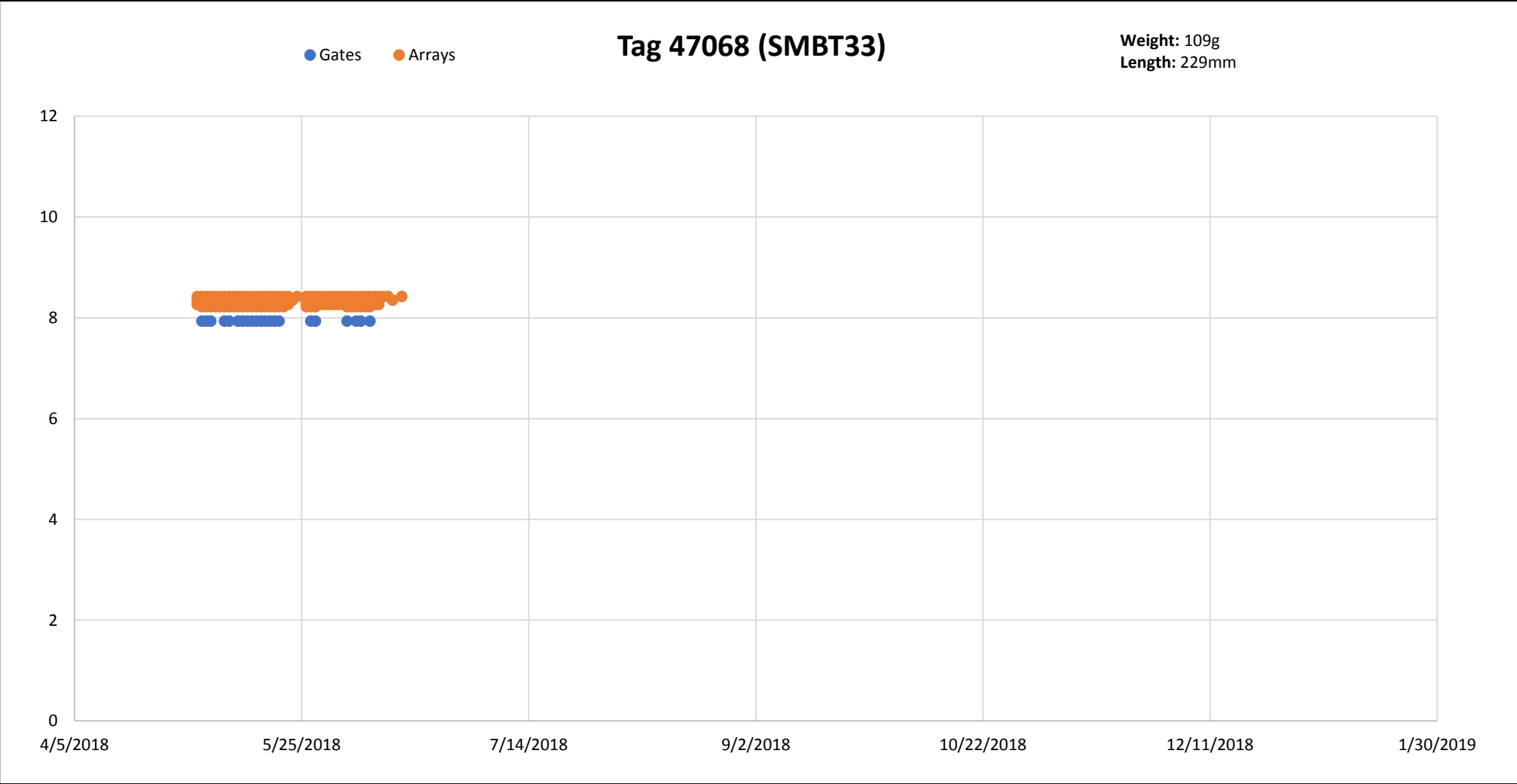




Fish Movement for 47067, Six Hour Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary



Tag 47068

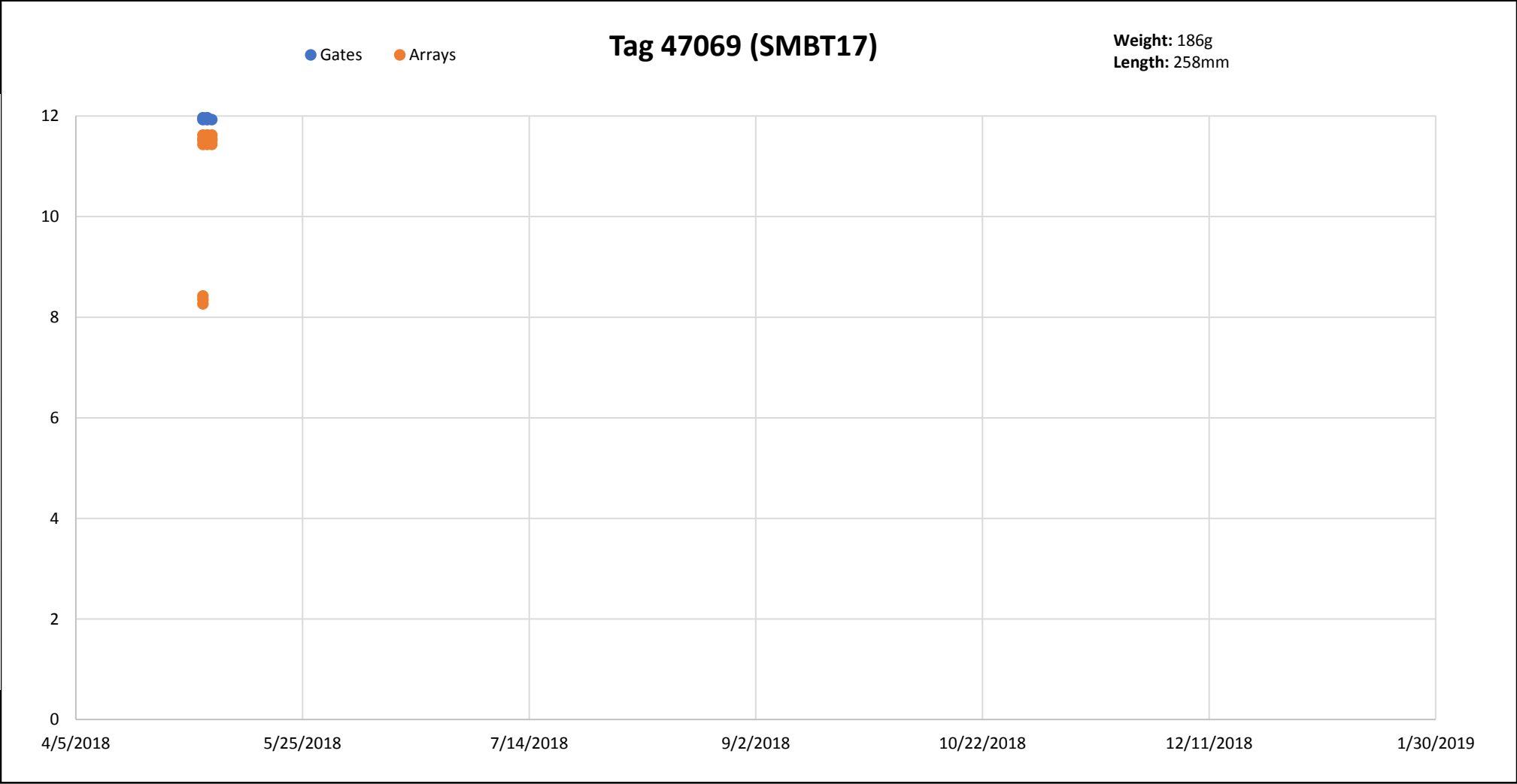


Source Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Fish Movement for 47068, Hourly Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Traveling and/or Leaving Study Area



Limited fish location data for 47069 (SMBT17) from the receiver arrays. No location map developed.

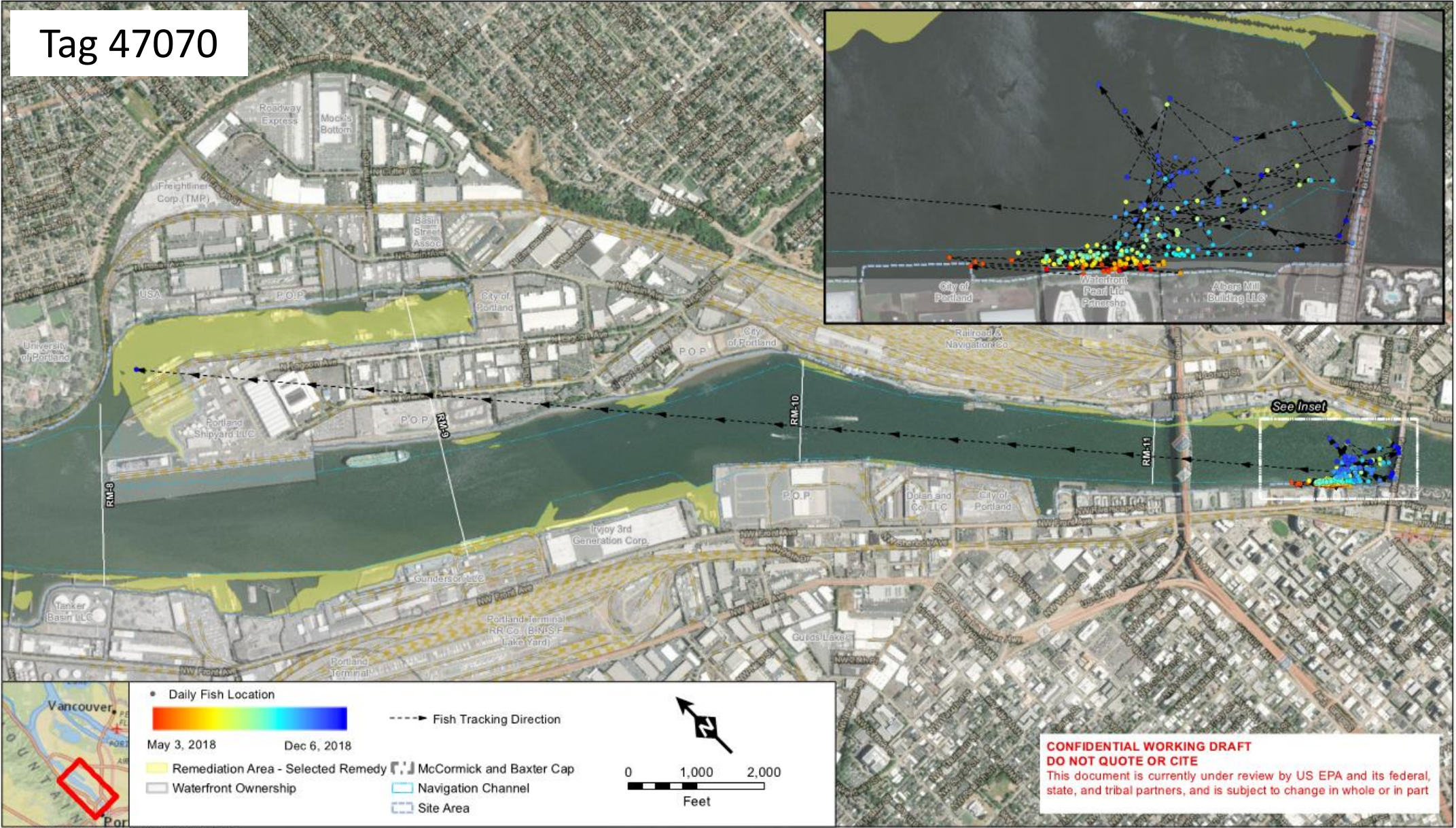
Tag 47070 (SMBT19)

Weight: 259g
Length: 265mm

Legend: Gates (blue), Arrays (orange)

Date	Depth (m)	Type
2018-04-25	8.5	Arrays
2018-05-01	11.5	Gates
2018-05-01	11.5	Arrays
2018-05-25	11.5	Gates
2018-05-25	11.5	Arrays
2018-06-01	11.5	Gates
2018-06-01	11.5	Arrays
2018-06-14	11.5	Gates
2018-06-14	11.5	Arrays
2018-09-02	11.5	Gates
2018-09-02	11.5	Arrays
2018-10-22	11.5	Gates
2018-10-22	11.5	Arrays
2018-12-11	8.5	Gates
2018-12-11	8.5	Arrays
2018-12-18	9.0	Gates
2019-01-05	9.0	Gates

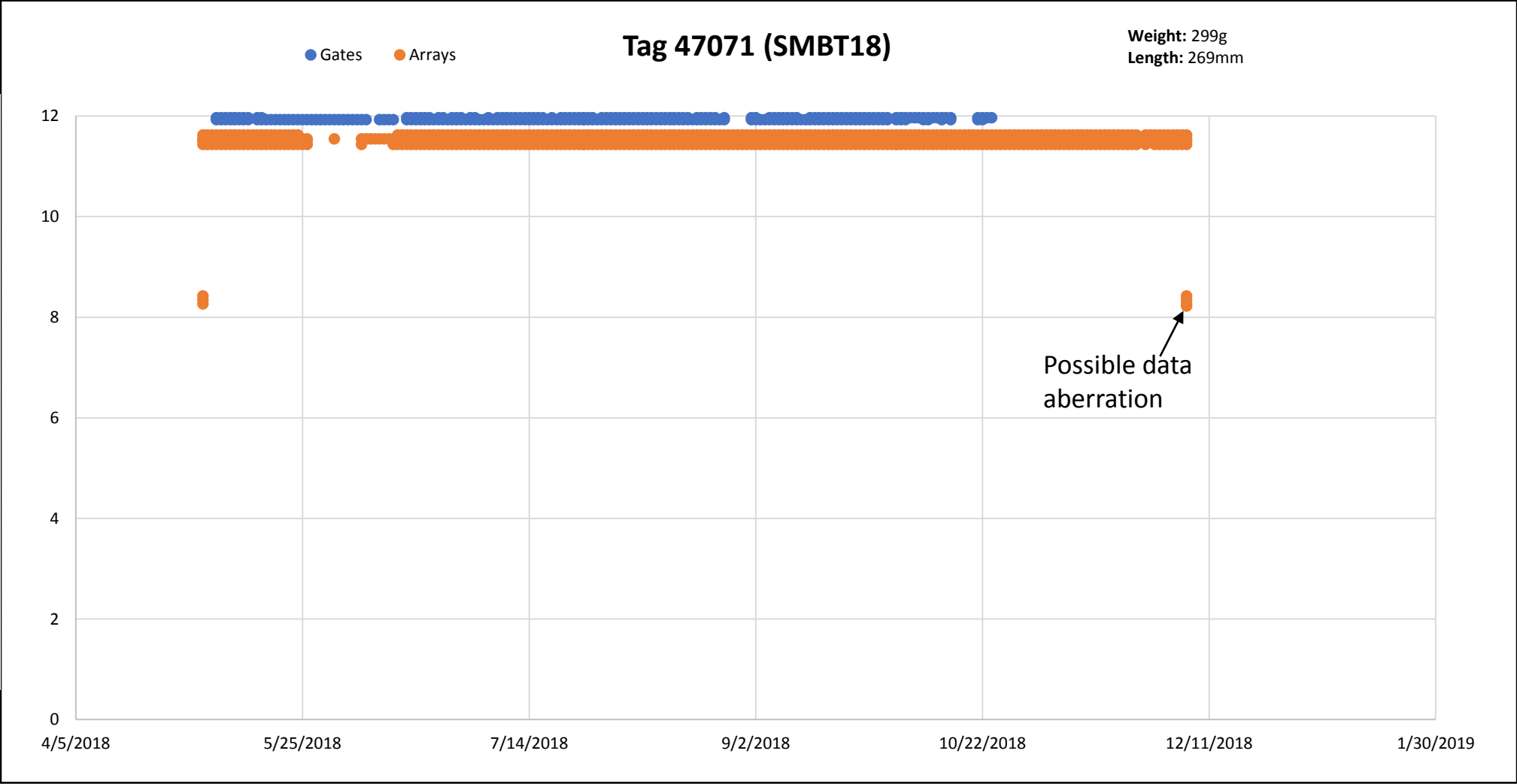
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

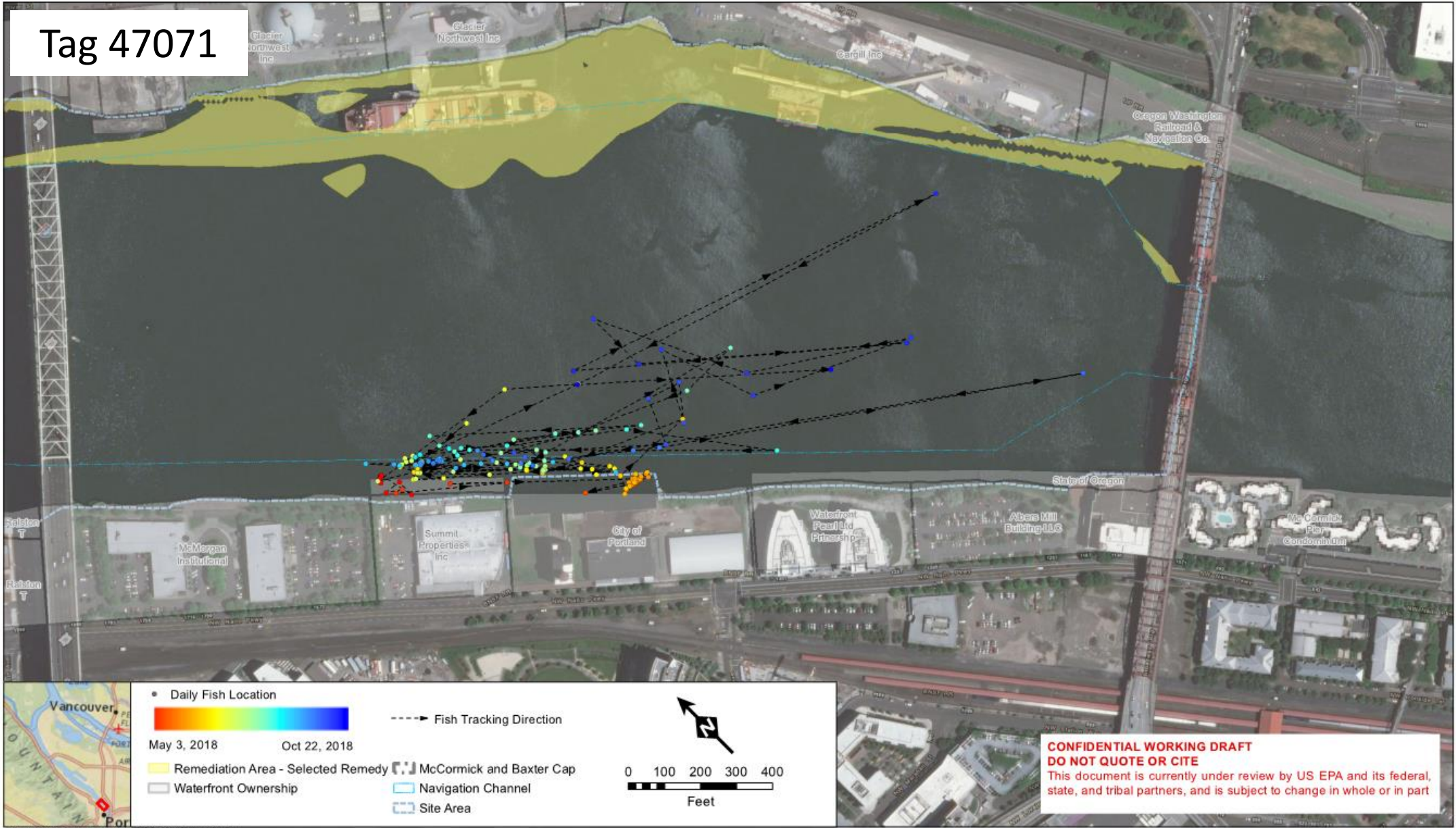


Fish Movement for 47070, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary

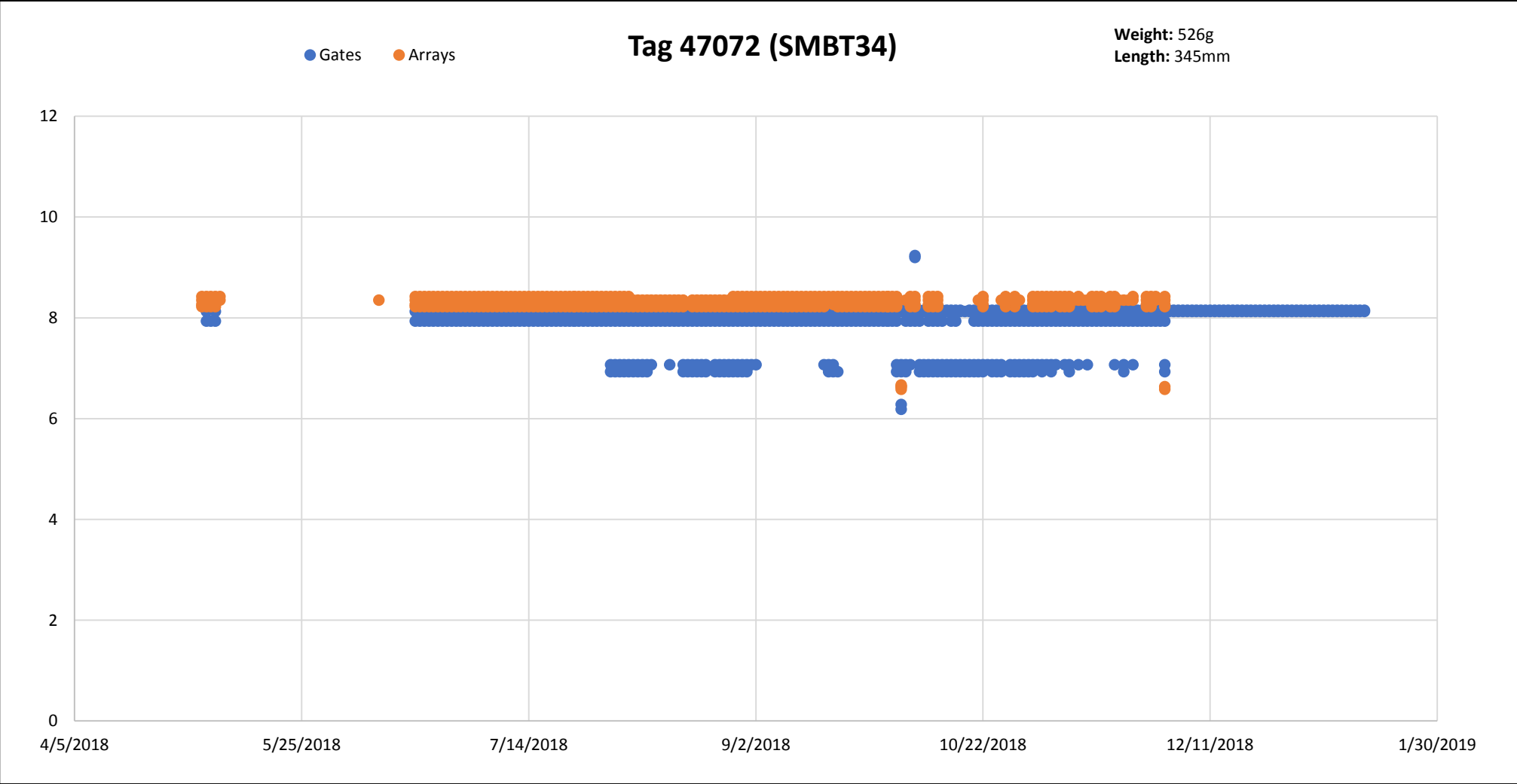




Fish Movement for 47071, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Predominantly Stationary





Fish Movement for 47072, Daily Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Tag 47073 (SMBT21)

Weight: 200g
Length: 238mm

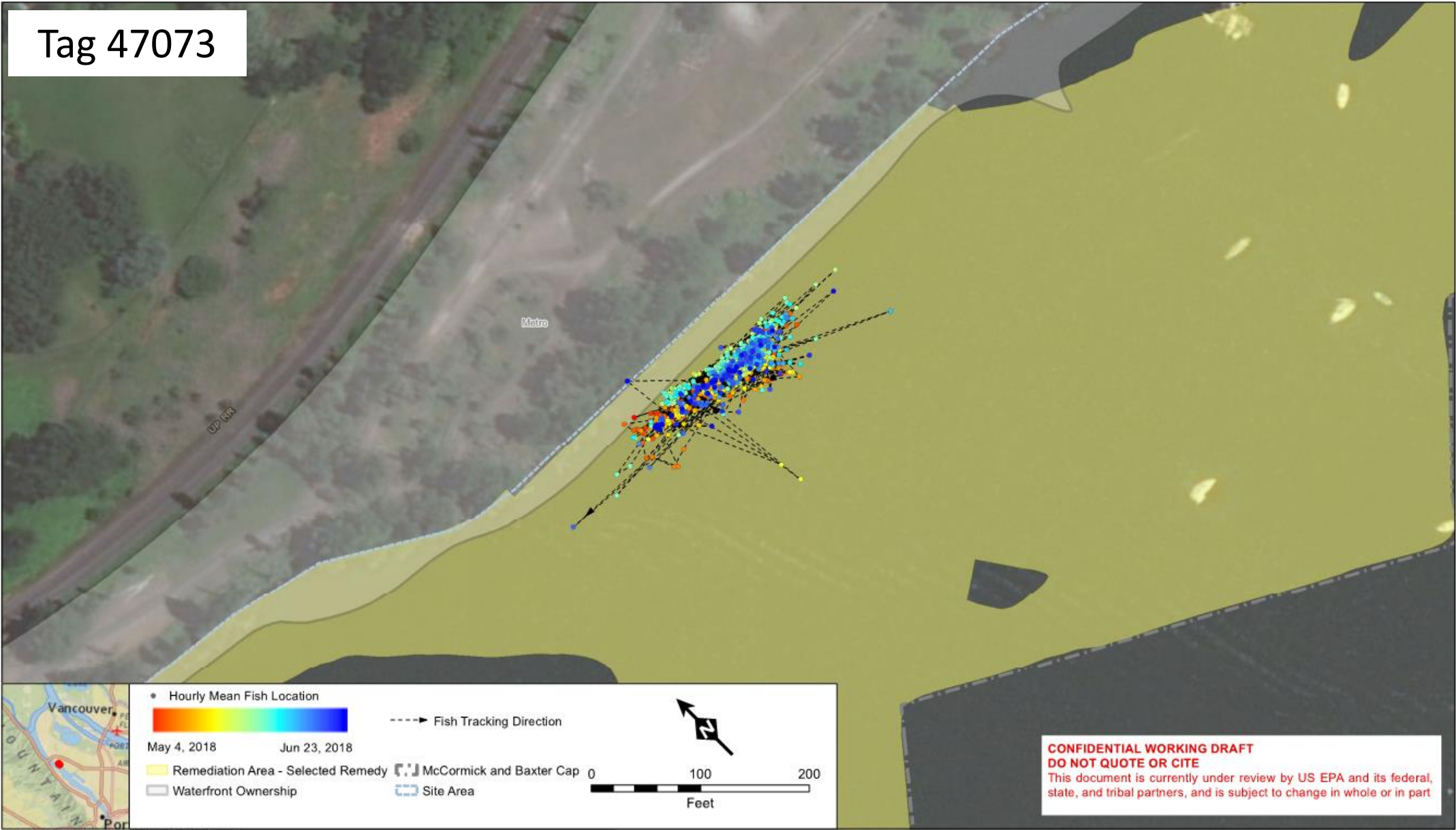
Legend: Gates (blue), Arrays (orange)

Possible data aberration

Date	Depth (m)	Type
2018-05-05	7.9	Gates
2018-05-05	8.3	Arrays
2018-05-05	8.4	Arrays
2018-05-05	8.5	Arrays
2018-05-05	8.6	Arrays
2018-05-05	8.7	Arrays
2018-05-05	8.8	Arrays
2018-05-05	8.9	Arrays
2018-05-05	9.0	Arrays
2018-05-05	9.1	Arrays
2018-05-05	9.2	Arrays
2018-05-05	9.3	Arrays
2018-05-05	9.4	Arrays
2018-05-05	9.5	Arrays
2018-05-05	9.6	Arrays
2018-05-05	9.7	Arrays
2018-05-05	9.8	Arrays
2018-05-05	9.9	Arrays
2018-05-05	10.0	Arrays
2018-05-05	10.1	Arrays
2018-05-05	10.2	Arrays
2018-05-05	10.3	Arrays
2018-05-05	10.4	Arrays
2018-05-05	10.5	Arrays
2018-05-05	10.6	Arrays
2018-05-05	10.7	Arrays
2018-05-05	10.8	Arrays
2018-05-05	10.9	Arrays
2018-05-05	11.0	Arrays
2018-05-05	11.1	Arrays
2018-05-05	11.2	Arrays
2018-05-05	11.3	Arrays
2018-05-05	11.4	Arrays
2018-05-05	11.5	Arrays
2018-05-05	11.6	Arrays
2018-05-05	11.7	Arrays
2018-05-05	11.8	Arrays
2018-05-05	11.9	Arrays
2018-05-05	12.0	Arrays
2018-05-05	12.1	Arrays
2018-05-05	12.2	Arrays
2018-05-05	12.3	Arrays
2018-05-05	12.4	Arrays
2018-05-05	12.5	Arrays
2018-05-05	12.6	Arrays
2018-05-05	12.7	Arrays
2018-05-05	12.8	Arrays
2018-05-05	12.9	Arrays
2018-05-05	13.0	Arrays
2018-05-05	13.1	Arrays
2018-05-05	13.2	Arrays
2018-05-05	13.3	Arrays
2018-05-05	13.4	Arrays
2018-05-05	13.5	Arrays
2018-05-05	13.6	Arrays
2018-05-05	13.7	Arrays
2018-05-05	13.8	Arrays
2018-05-05	13.9	Arrays
2018-05-05	14.0	Arrays
2018-05-05	14.1	Arrays
2018-05-05	14.2	Arrays
2018-05-05	14.3	Arrays
2018-05-05	14.4	Arrays
2018-05-05	14.5	Arrays
2018-05-05	14.6	Arrays
2018-05-05	14.7	Arrays
2018-05-05	14.8	Arrays
2018-05-05	14.9	Arrays
2018-05-05	15.0	Arrays
2018-05-05	15.1	Arrays
2018-05-05	15.2	Arrays
2018-05-05	15.3	Arrays
2018-05-05	15.4	Arrays
2018-05-05	15.5	Arrays
2018-05-05	15.6	Arrays
2018-05-05	15.7	Arrays
2018-05-05	15.8	Arrays
2018-05-05	15.9	Arrays
2018-05-05	16.0	Arrays
2018-05-05	16.1	Arrays
2018-05-05	16.2	Arrays
2018-05-05	16.3	Arrays
2018-05-05	16.4	Arrays
2018-05-05	16.5	Arrays
2018-05-05	16.6	Arrays
2018-05-05	16.7	Arrays
2018-05-05	16.8	Arrays
2018-05-05	16.9	Arrays
2018-05-05	17.0	Arrays
2018-05-05	17.1	Arrays
2018-05-05	17.2	Arrays
2018-05-05	17.3	Arrays
2018-05-05	17.4	Arrays
2018-05-05	17.5	Arrays
2018-05-05	17.6	Arrays
2018-05-05	17.7	Arrays
2018-05-05	17.8	Arrays

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Tag 47073

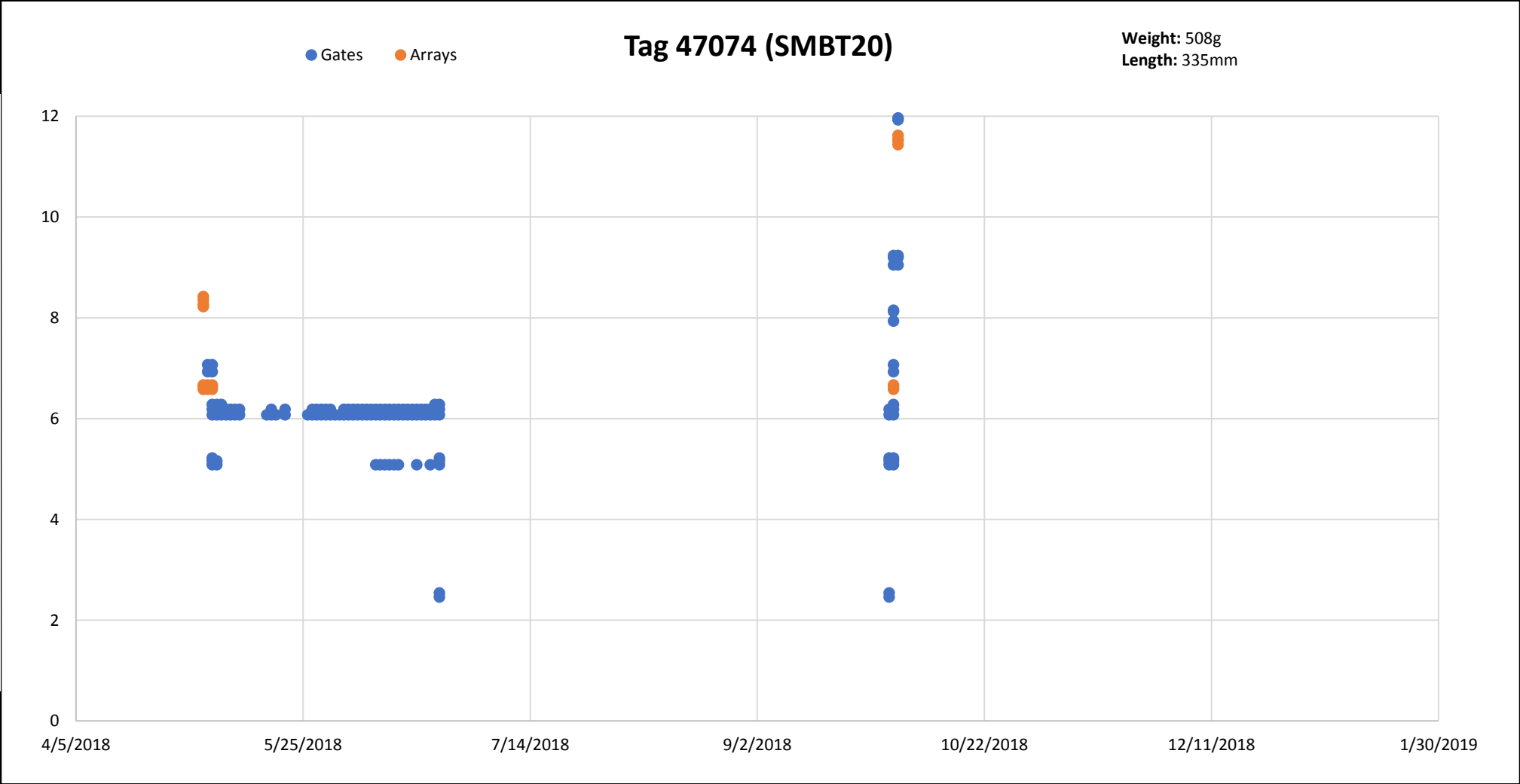


Source Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Fish Movement for 47073, Hourly Mean
Portland Harbor Superfund Site

Confidential Working Draft – Do not quote
or cite. For internal MOU purposes only.

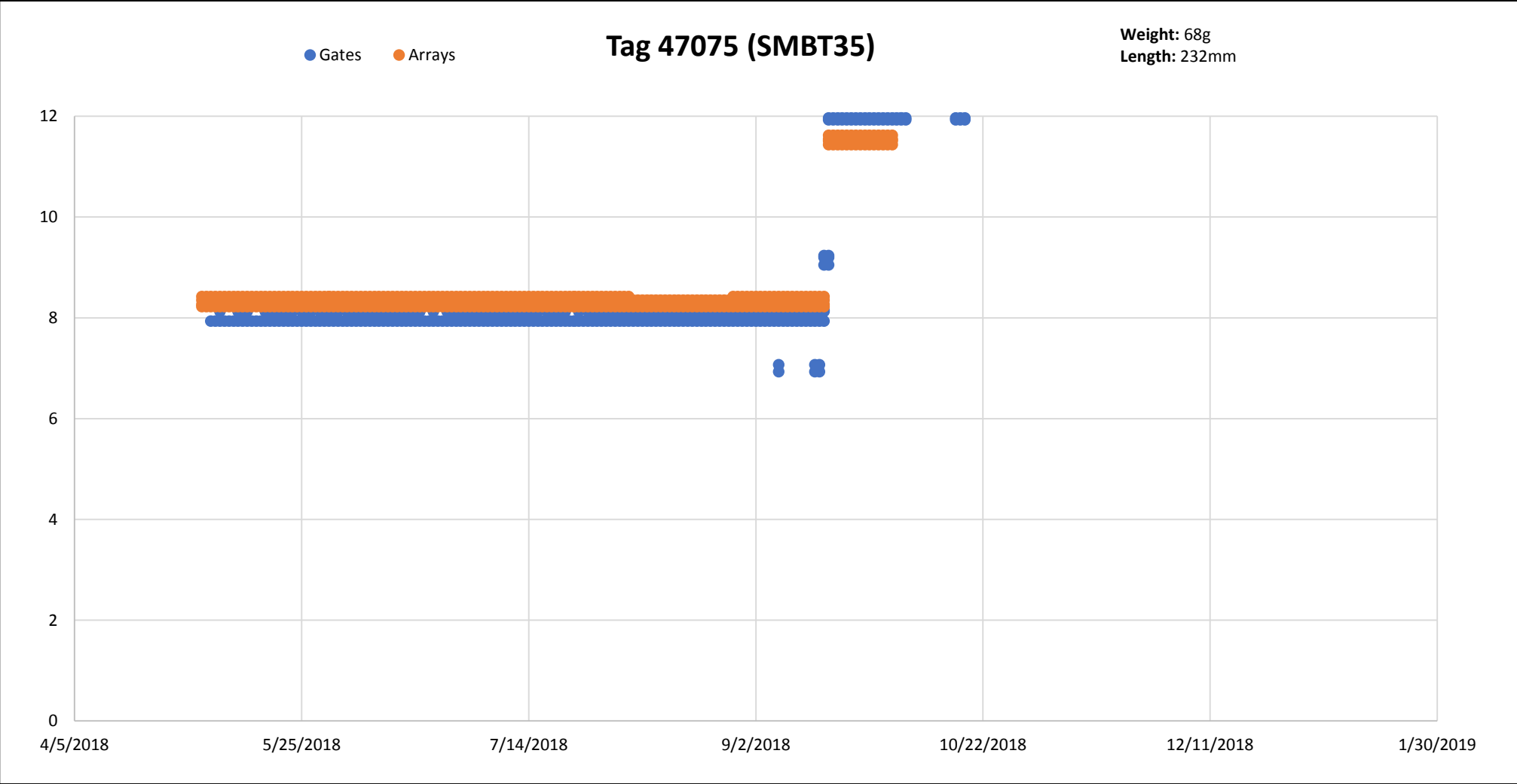
Predominantly Traveling and/or Leaving Study Area

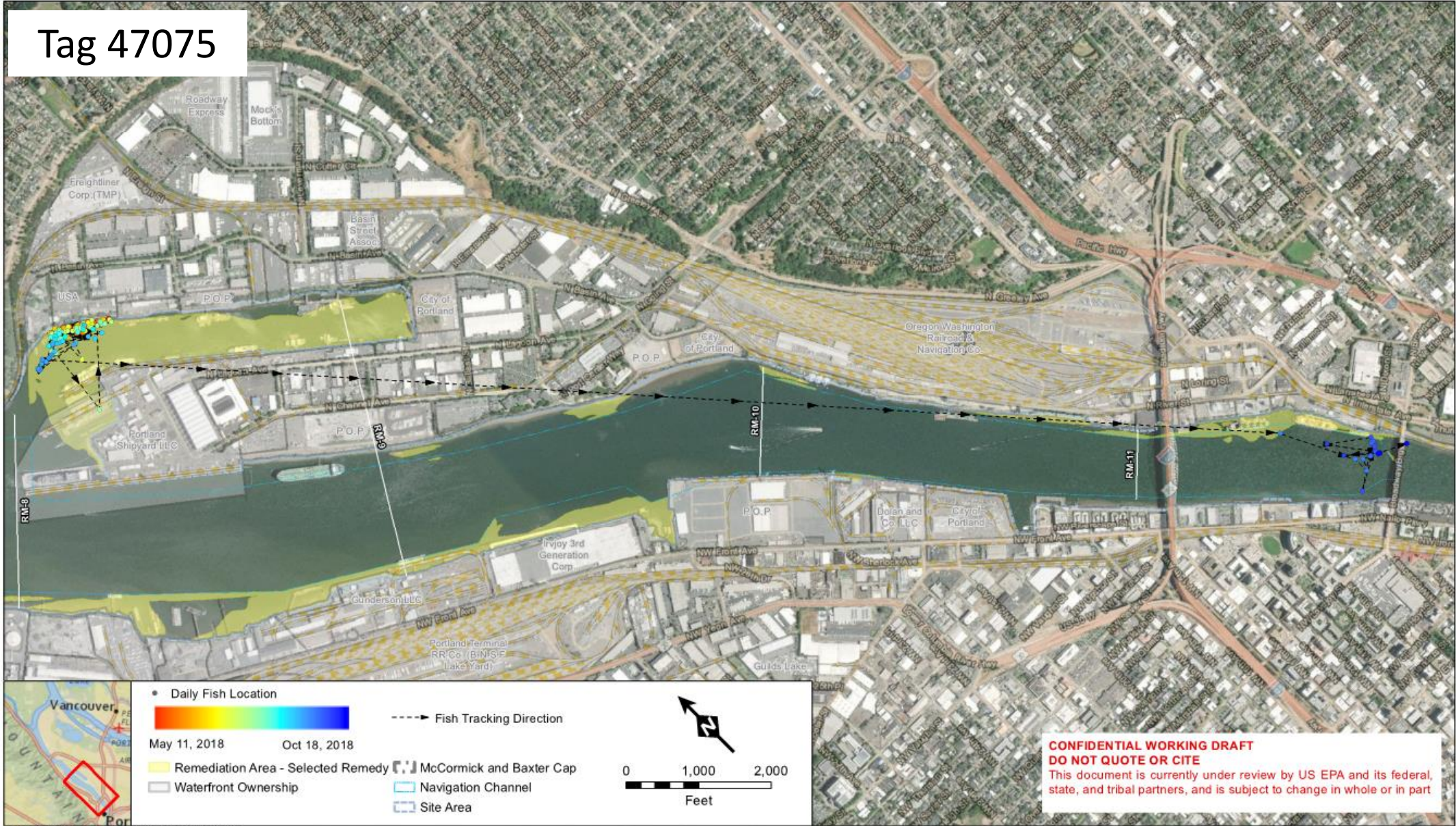


Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Limited fish location data for 47074 (SMBT20) from the receiver arrays. No location map developed.

Stationary with Traveling and/or Leaving Study Area





Fish Movement for 47075, Daily Mean
Portland Harbor Superfund Site

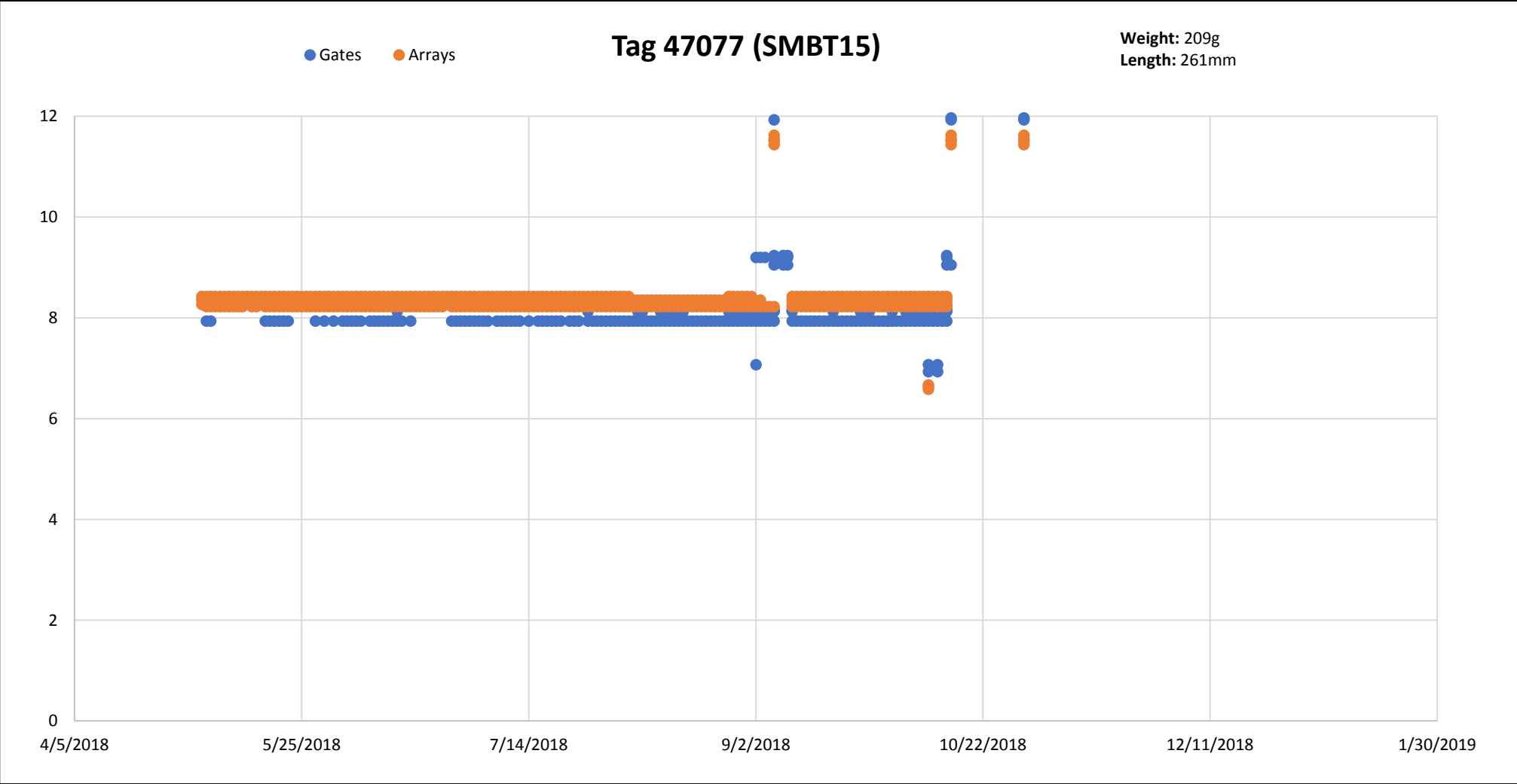
Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

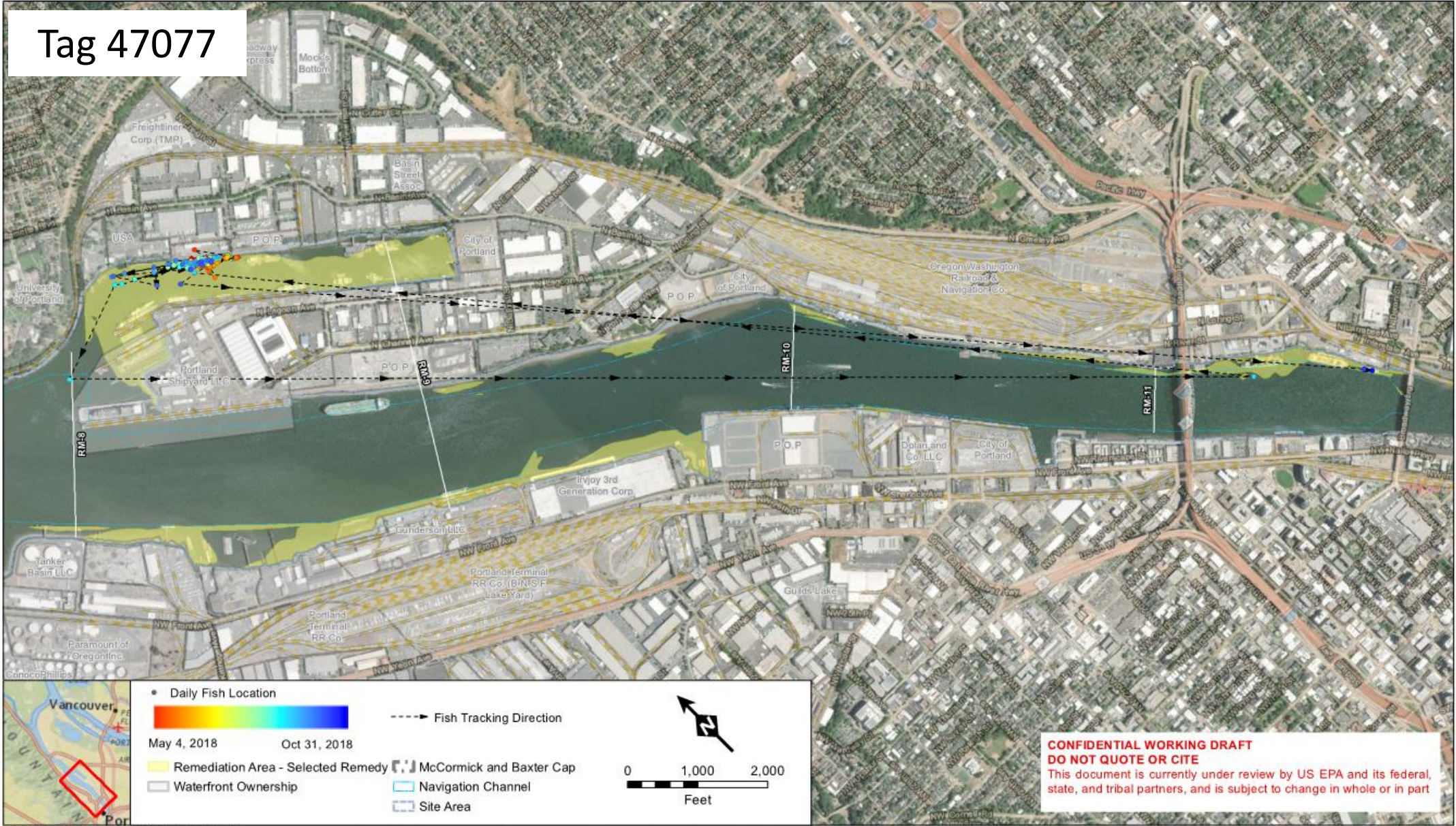
[illegible]

Confidential Working Draft – Do not quote or cite. For internal MOU purposes only.

Limited fish location data for 47076 (SMBT36) from the receiver arrays. No location map developed.

Stationary with Traveling and/or Leaving Study Area

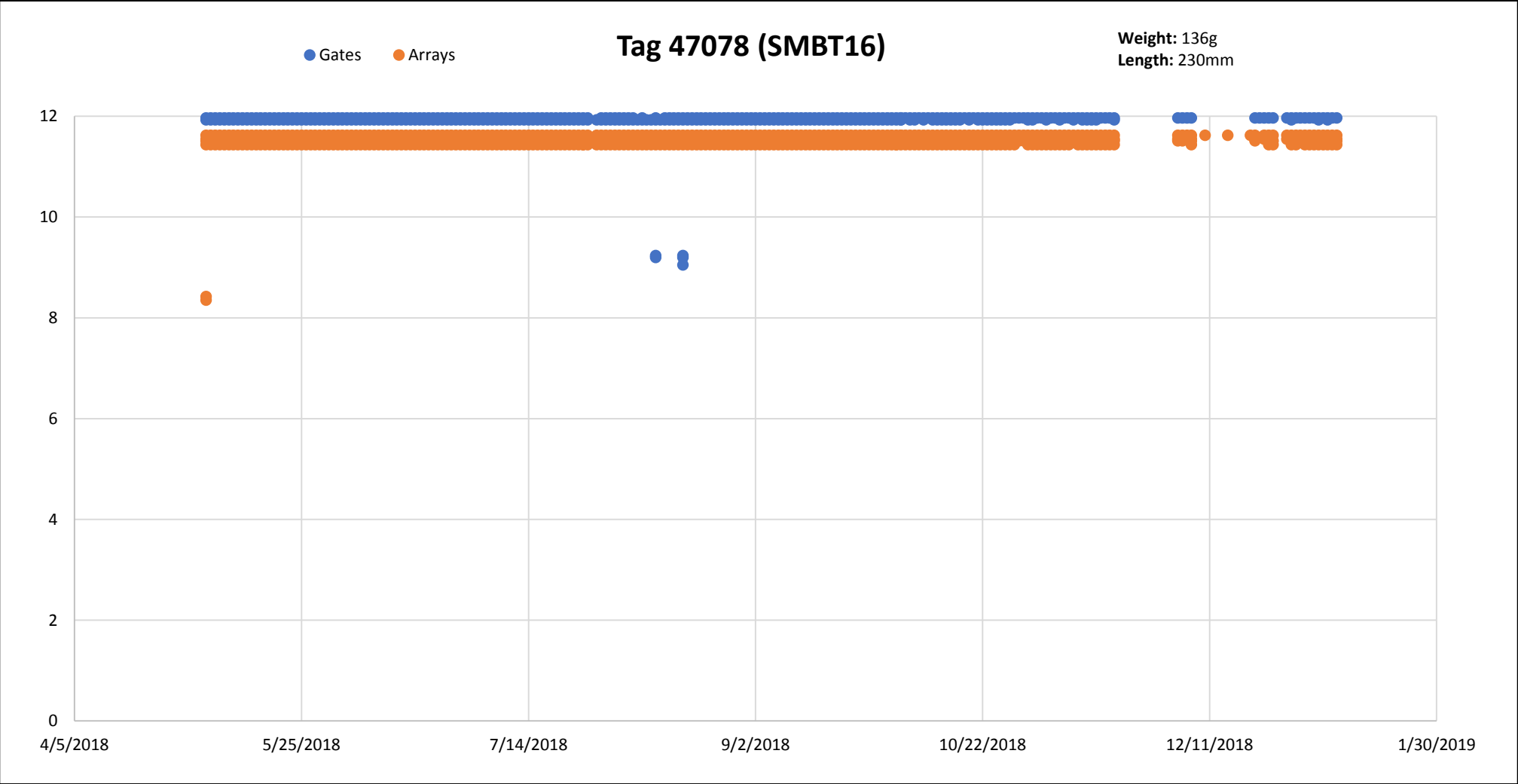




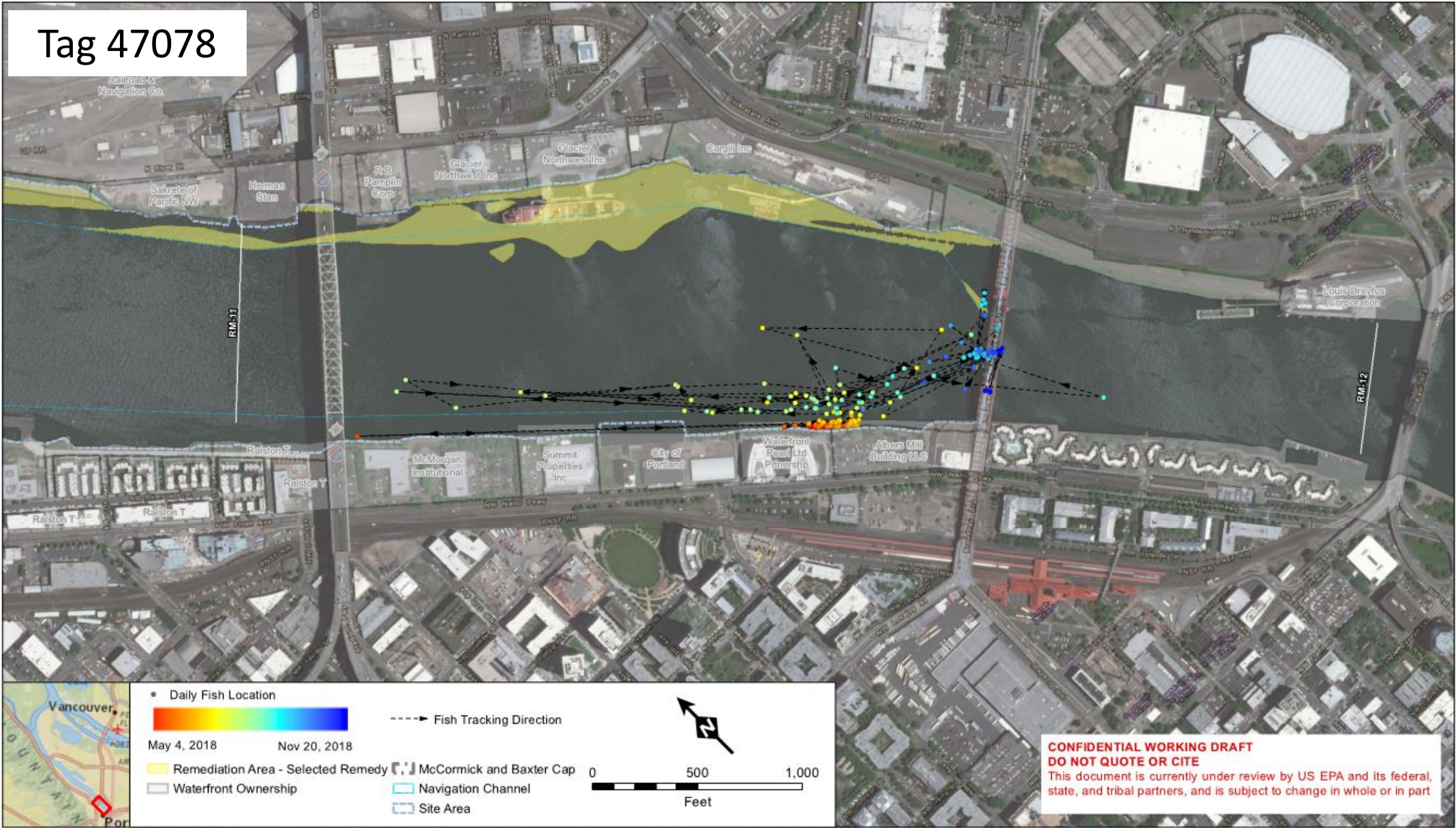
Fish Movement for 47077, Daily Mean
Portland Harbor Superfund Site

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Predominantly Stationary



Tag 47078

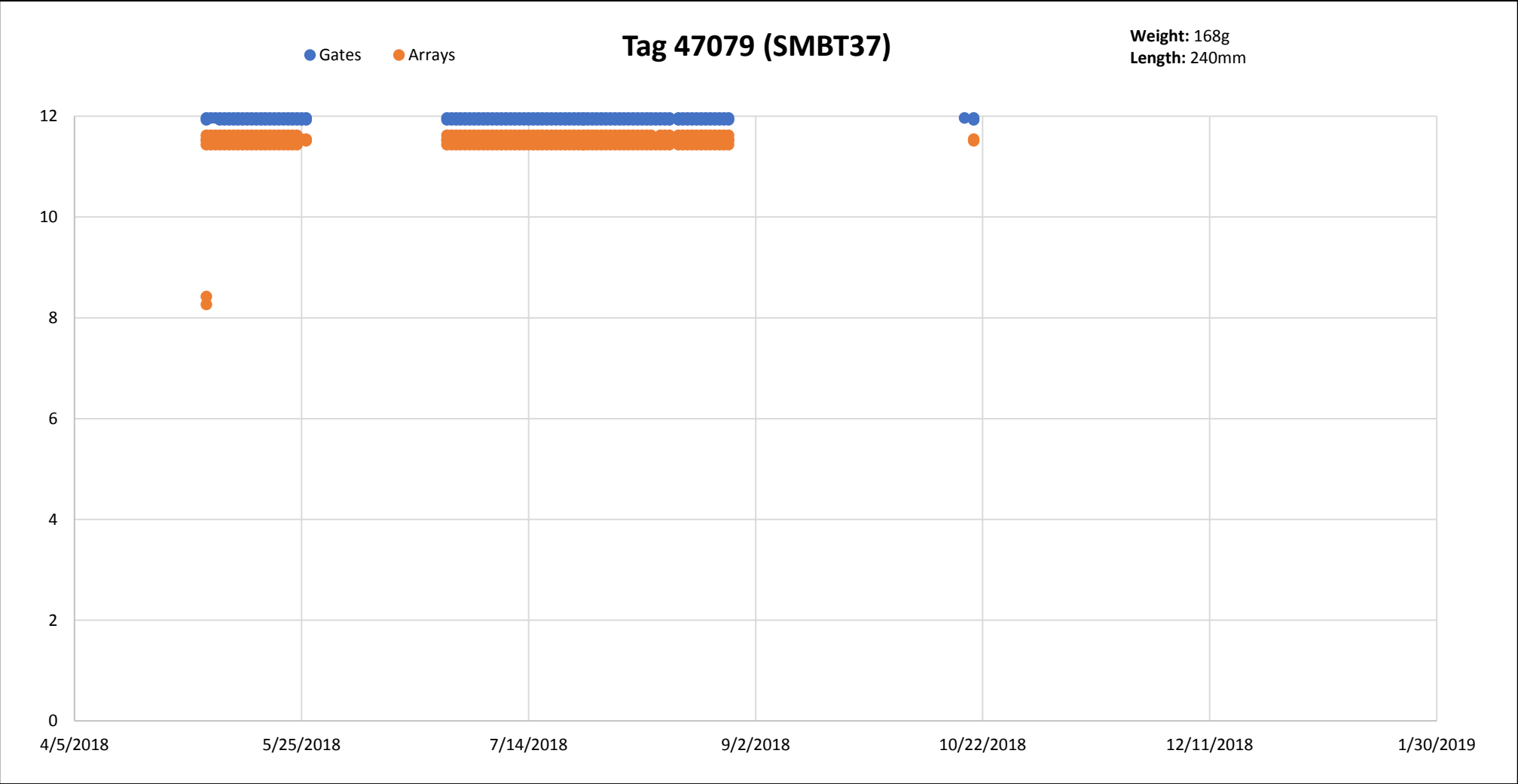


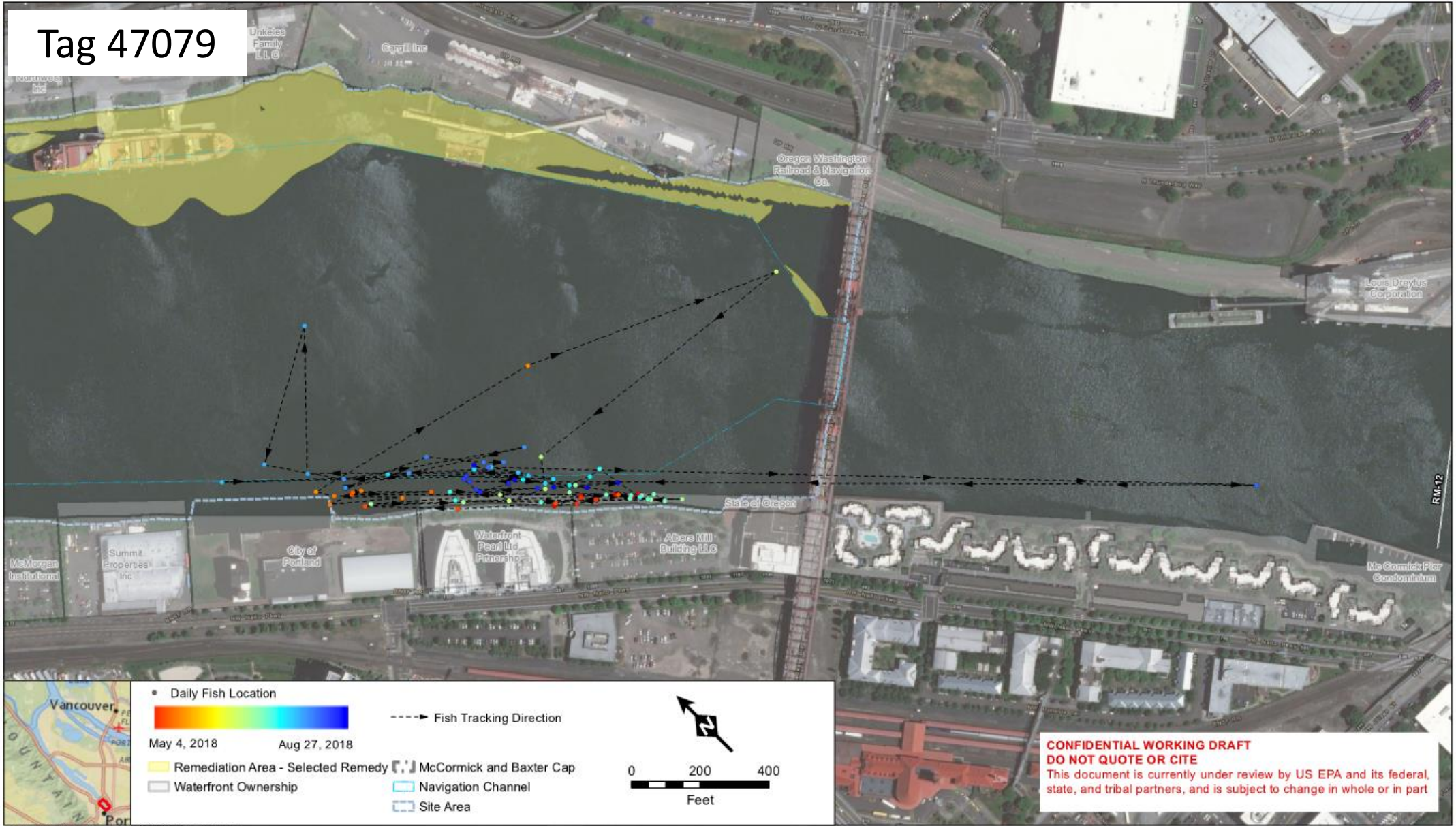
Source Credit: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Fish Movement for 47078, Daily Mean
Portland Harbor Superfund Site

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Stationary with Traveling and/or Leaving Study Area

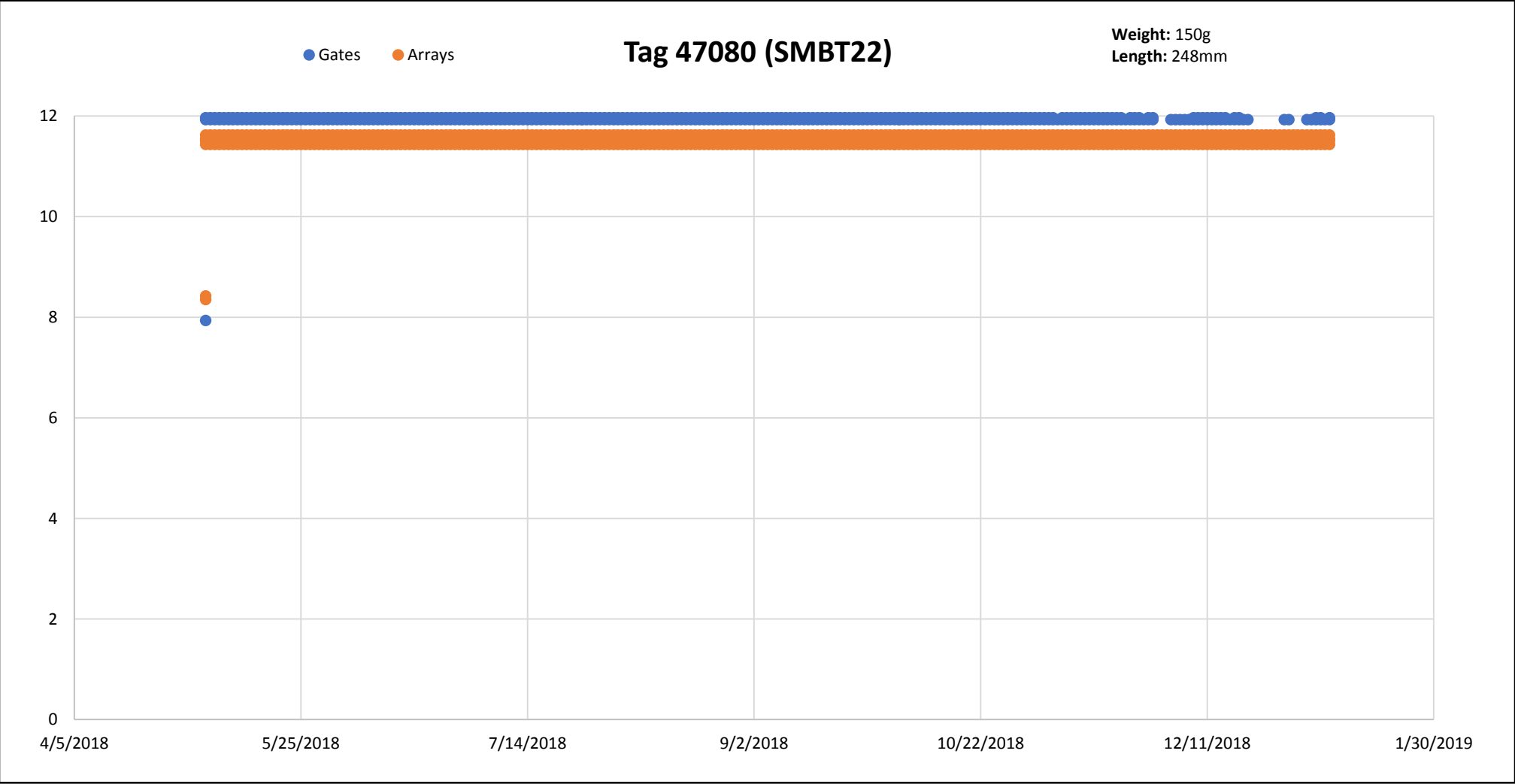


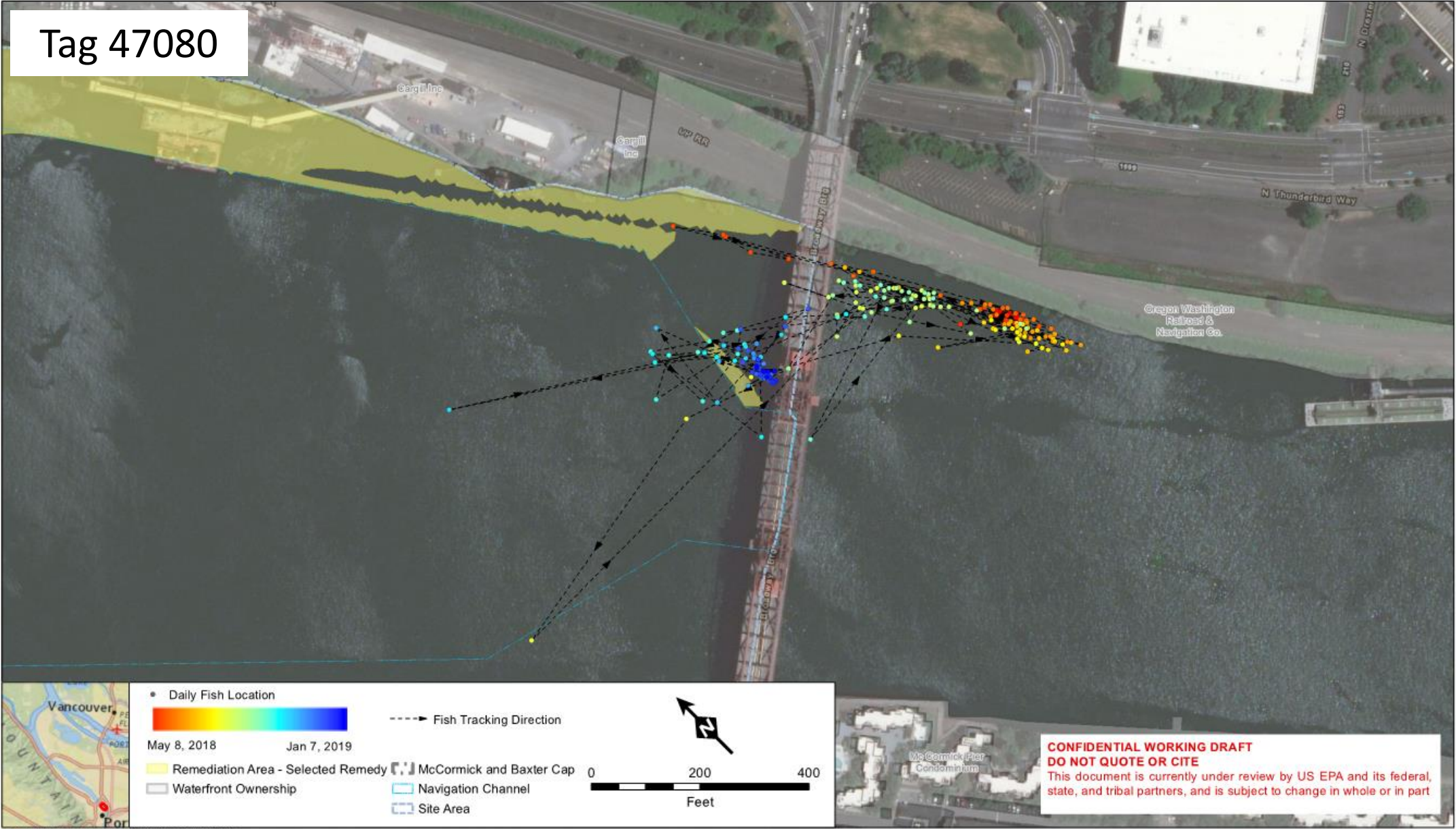


Fish Movement for 47079, Daily Mean
Portland Harbor Superfund Site

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Predominantly Stationary





Fish Movement for 47080, Daily Mean
Portland Harbor Superfund Site

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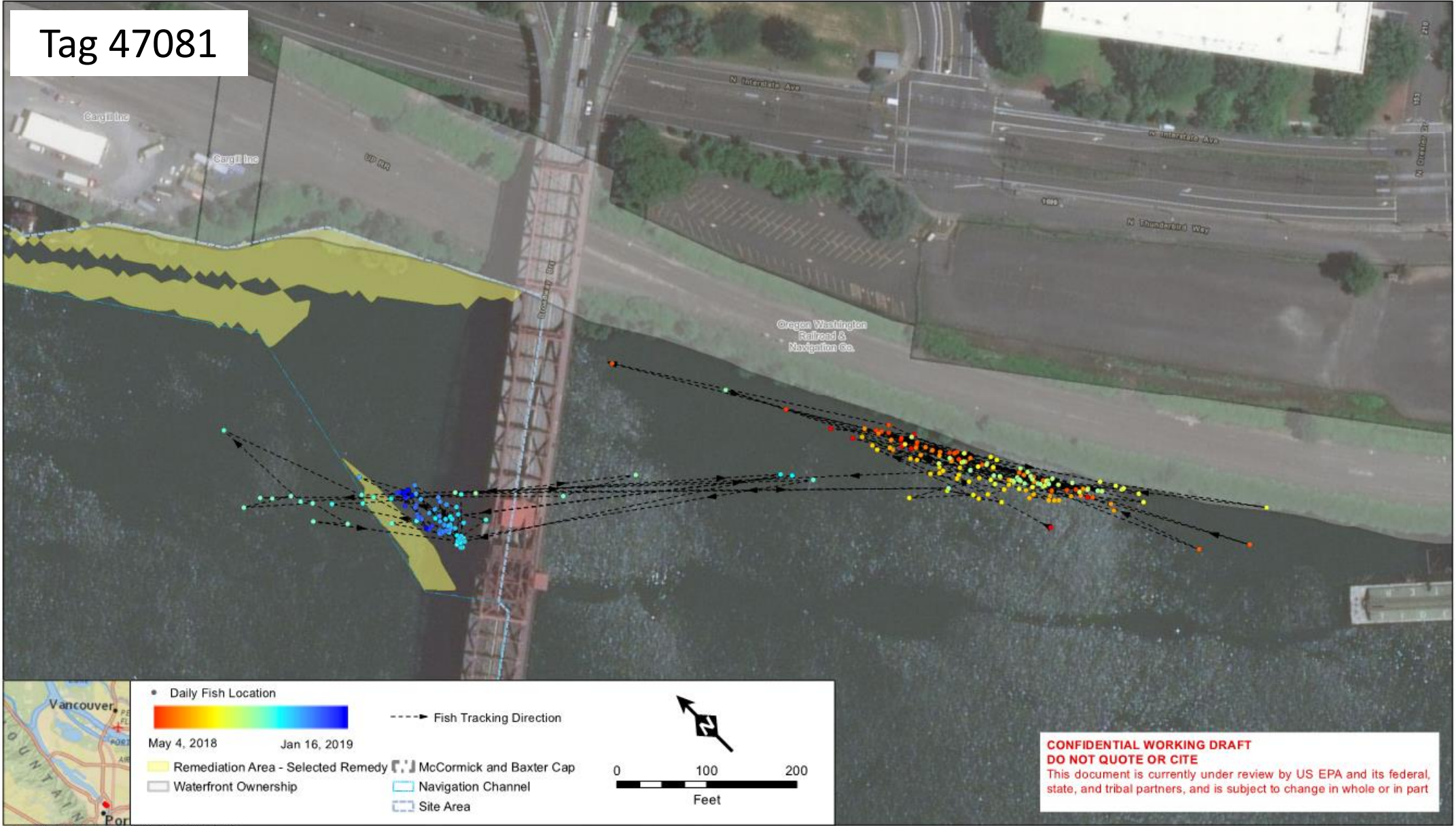
Tag 47081 (SMBT23)

Weight: 417g
Length: 328mm

Legend: Gates (blue), Arrays (orange)

The plot displays data points for two categories: Gates (blue) and Arrays (orange). The x-axis represents time from 4/5/2018 to 1/30/2019, and the y-axis represents a numerical value from 0 to 12. A dense band of data points is visible at the top of the plot (y=12), with a single outlier for Arrays at approximately y=8.3 in early 2018.

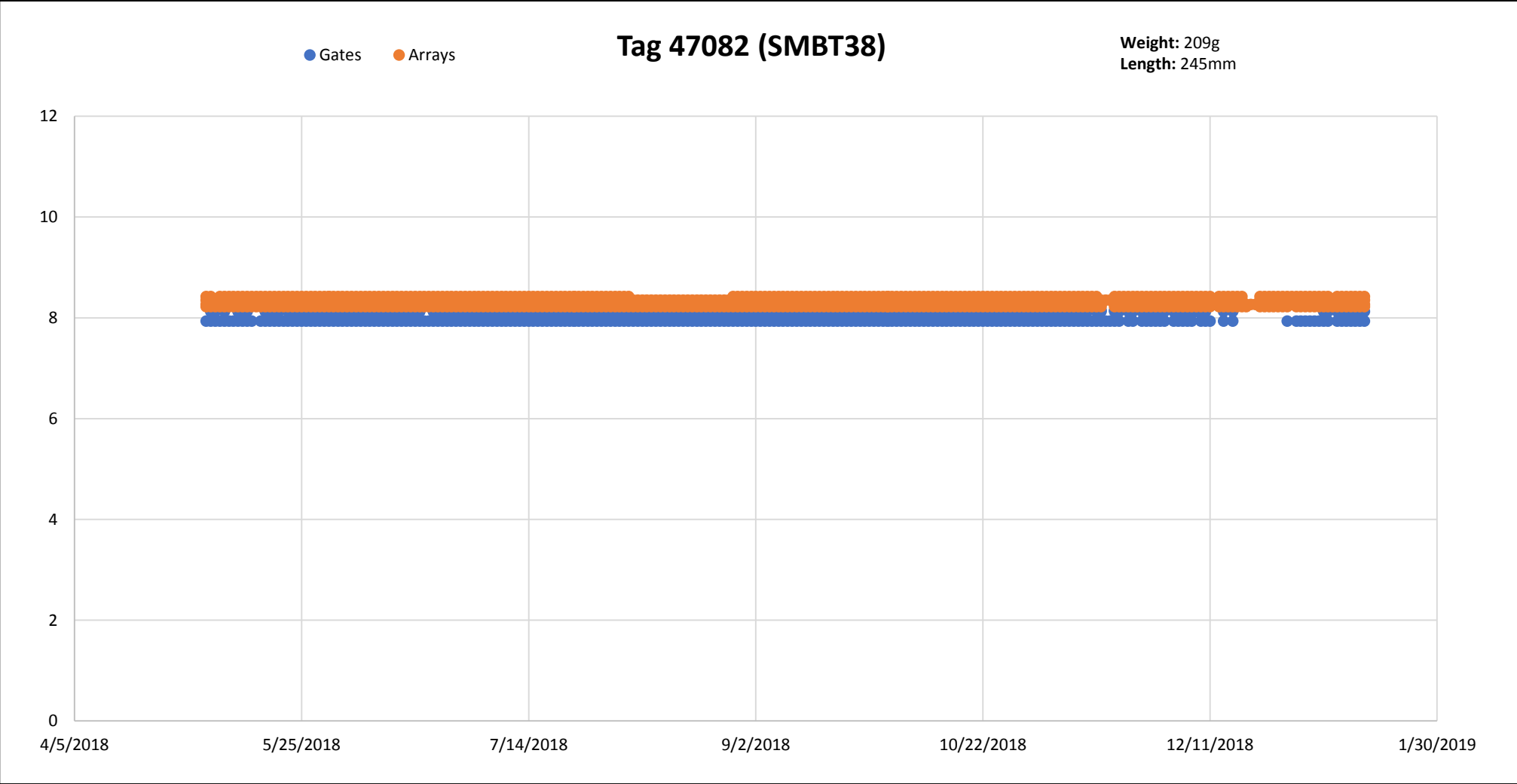
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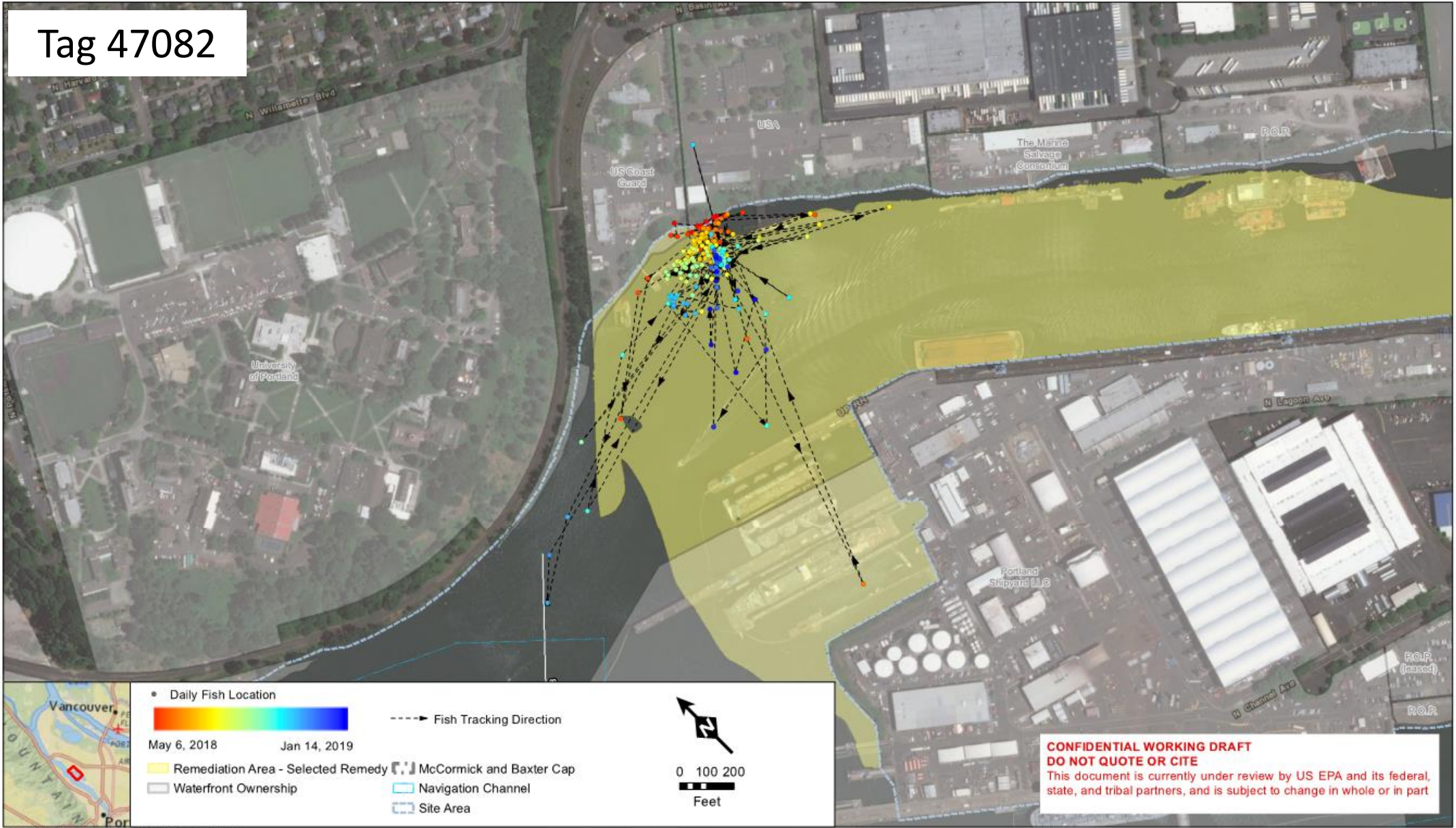
Fish Movement for 47081, Daily Mean
Portland Harbor Superfund Site

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Predominantly Stationary



Tag 47082

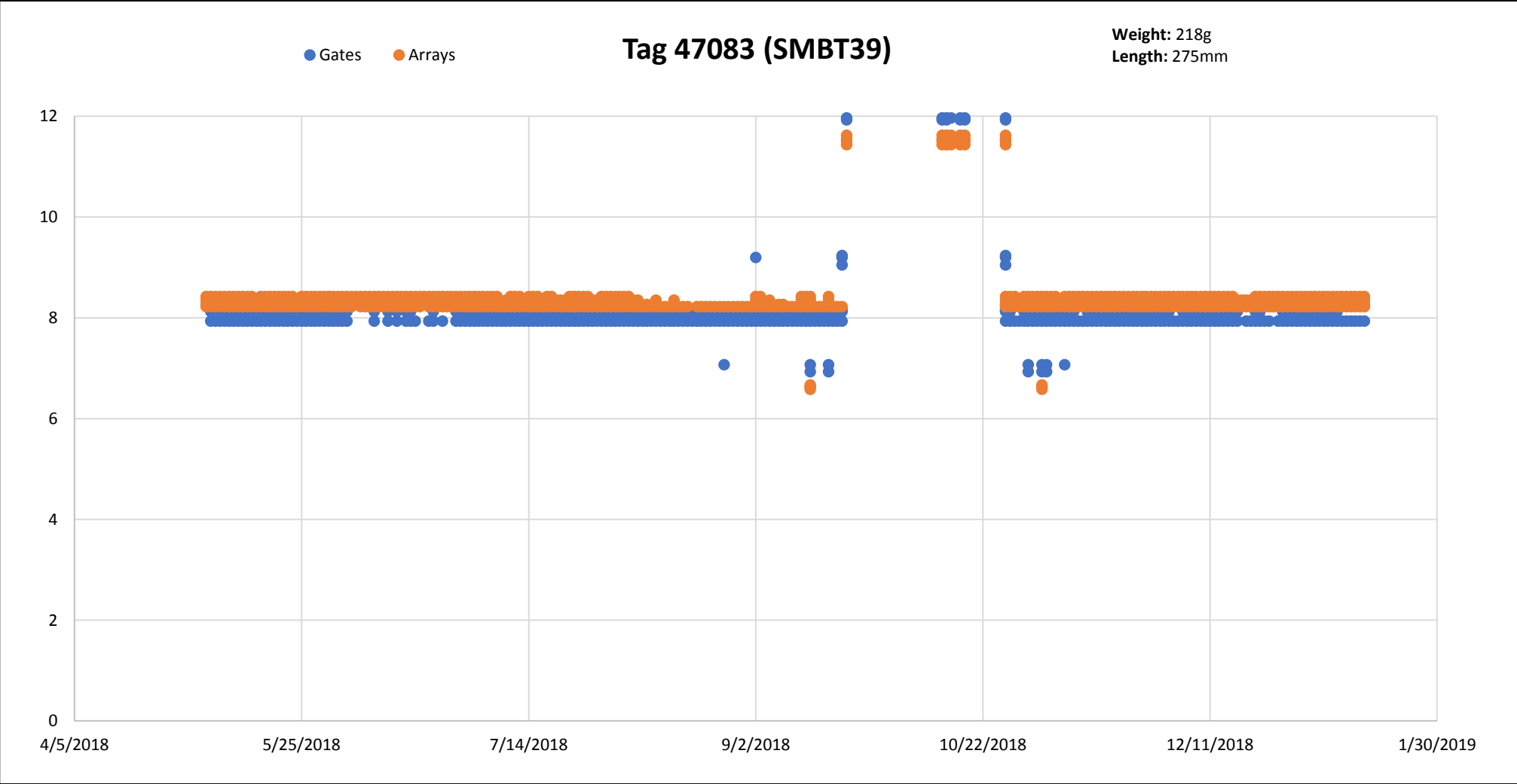


Source Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

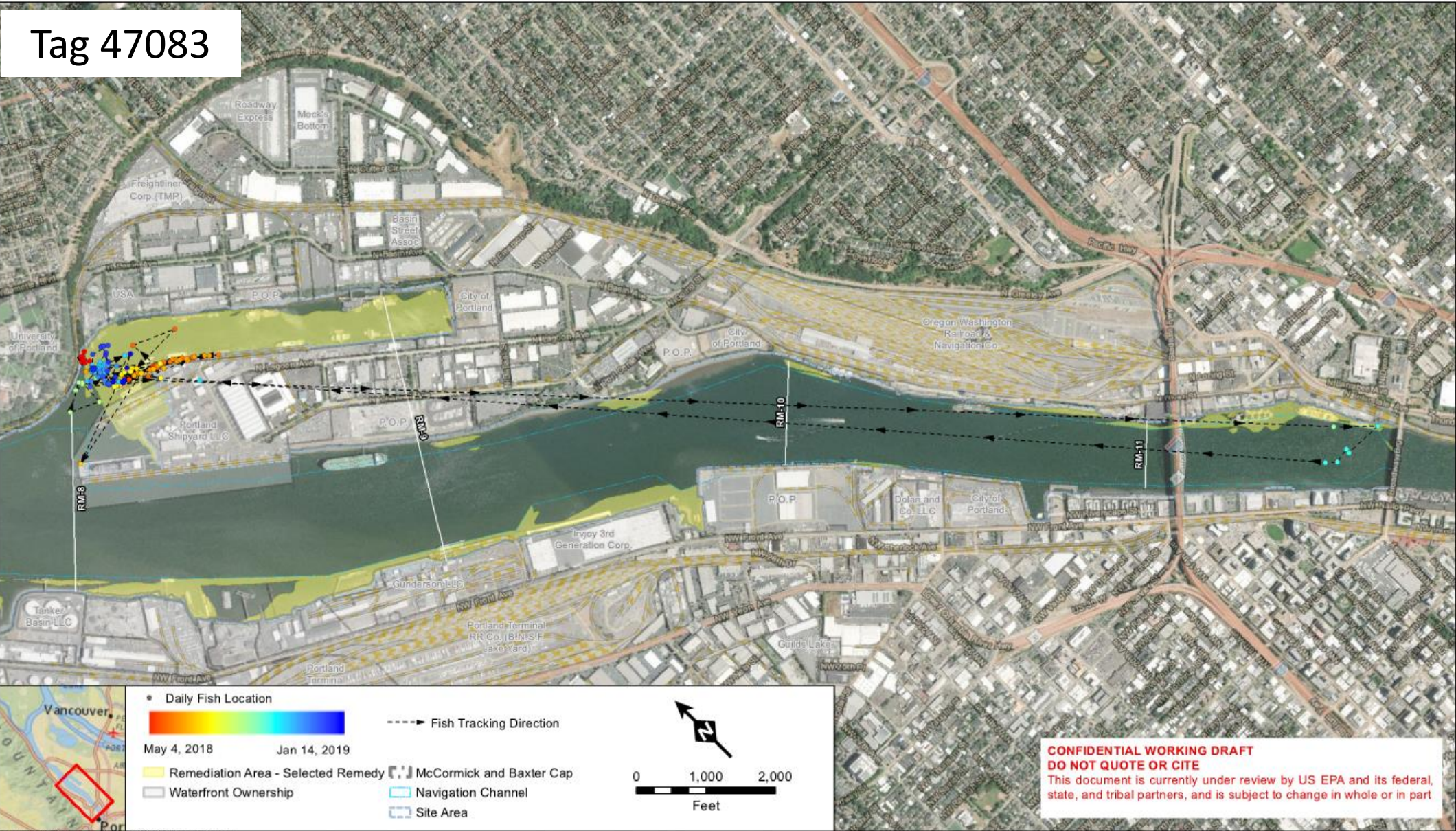
Fish Movement for 47082, Daily Mean
Portland Harbor Superfund Site

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Stationary with Traveling and/or Leaving Study Area



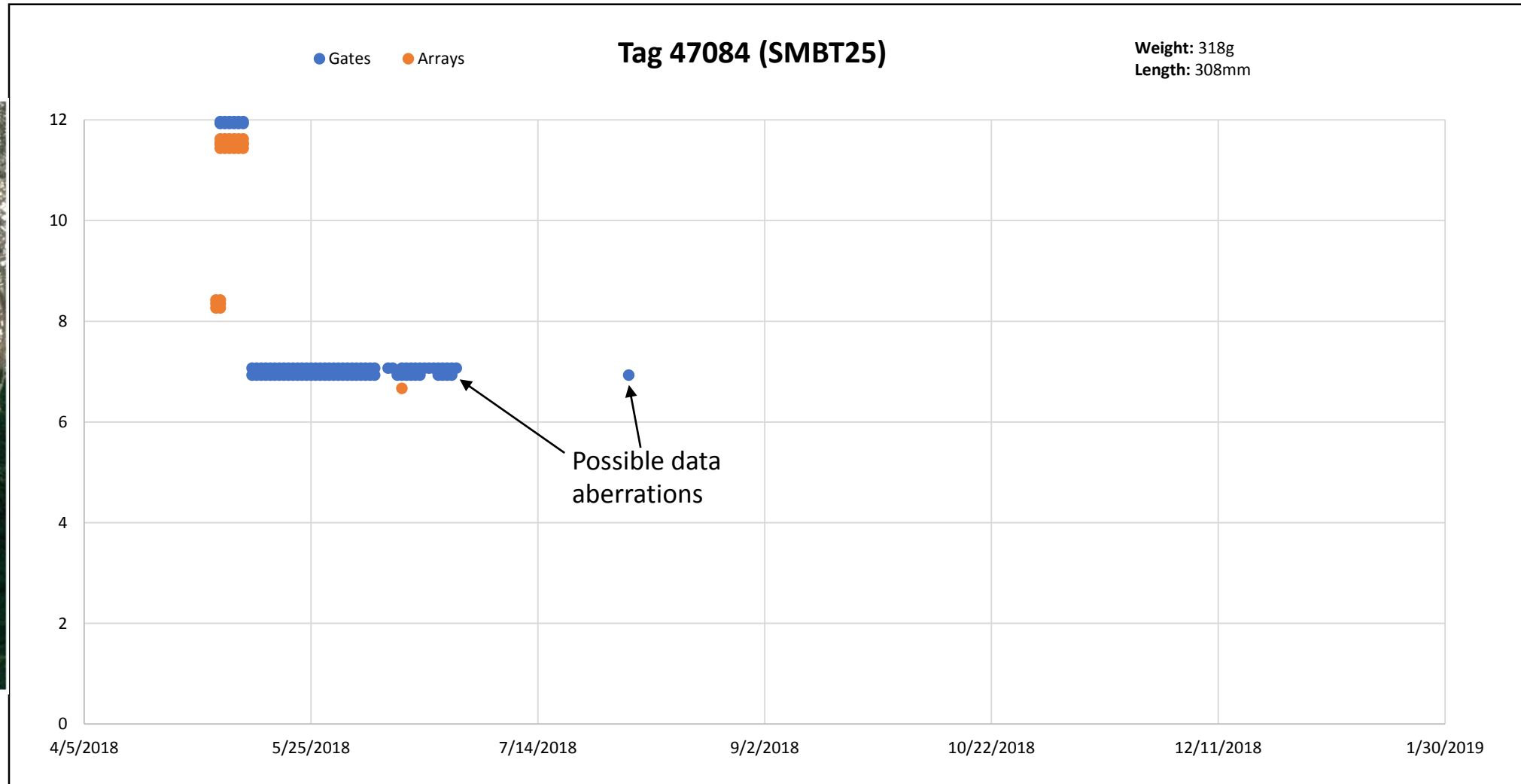
Tag 47083



Fish Movement for 47083, Daily Mean
Portland Harbor Superfund Site

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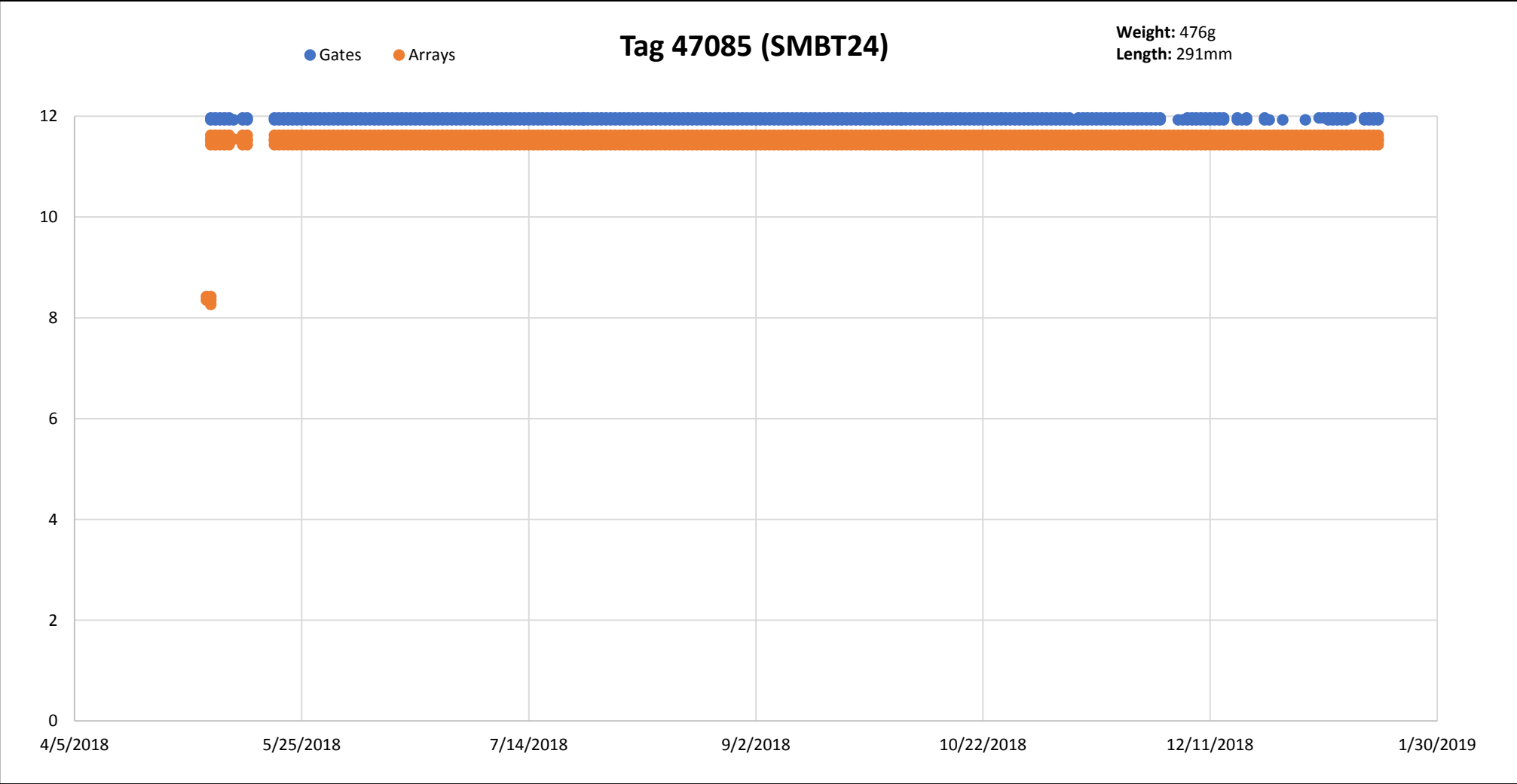
Predominantly Traveling and/or Leaving Study Area

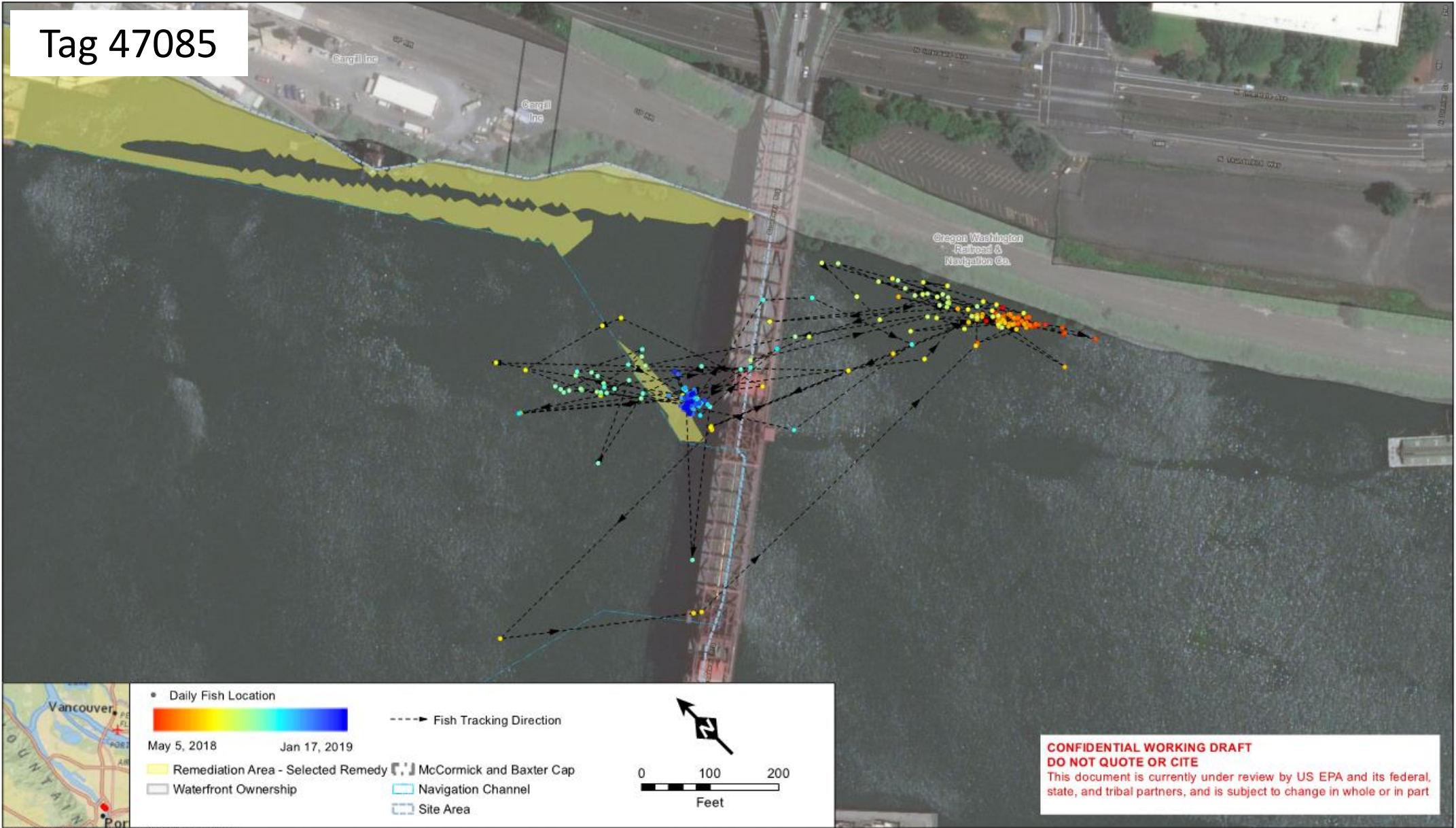


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Limited fish location data for 47084 (SMBT25) from the receiver arrays. No location map developed.

Predominantly Stationary





Fish Movement for 47085, Daily Mean
Portland Harbor Superfund Site

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